Water in Northern Alberta

Conference Report

Grande Prairie
November 4 - 6, 1987

Northern Alberta Development Council

88-04045/

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Alberta
NORTHERN ALBERTA
DEVELOPMENT COUNCIL

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March, 1988

In early 1986 the Northern Alberta Development Council began an intensive eighteen month project to identify concerns related to water, a valuable northern resource. The project culminated in November of 1987 with the holding of a major conference in Grande Prairie. The conference, entitled Water in Northern Alberta, brought together some 220 delegates from communities, interest groups, government and industry to examine ideas and suggest actions to deal with water issues in northern Alberta.

Prior to the conference, focus groups and workshops were held across the north to obtain the thoughts of northerners from all walks of life. As a result of these efforts and the deliberations of the conference delegates, the Northern Alberta Development Council prepared a set of recommendations for consideration by various parties. This report outlines the review process, the discussions of the conference delegates and the subsequent recommendations of the Council.

We are pleased to present this document for your review and action.

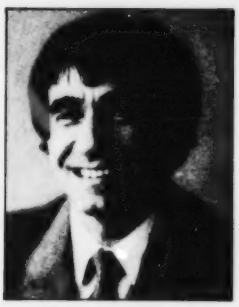
Bob Elliott

Bob Elliott, MLA
Chairman

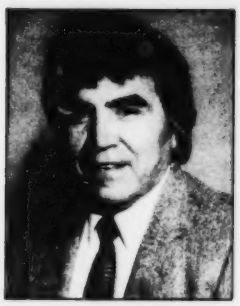
NORTHERN ALBERTA DEVELOPMENT COUNCIL 1987/88

BOB ELLIOTT, MLA
CHAIRMAN
BEAVERLODGE

HON. AL "BOOMER" ADAIR
MINISTER RESPONSIBLE FOR
NORTHERN DEVELOPMENT
PEACE RIVER

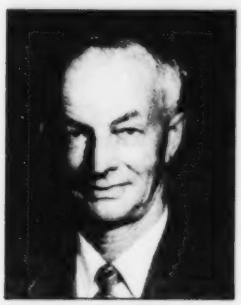


GENE DEXTRASE
VICE-CHAIRMAN
HIGH LEVEL



MIKE BEAVER
DESMARAIS

MARY BENNETT
ELK POINT



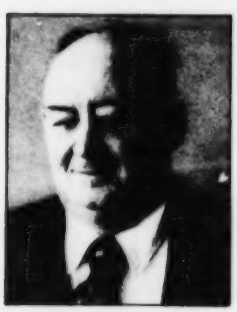
JOHN DROBOT, MLA
ST. PAUL

MARCEL DUCHARME
BONNYVILLE

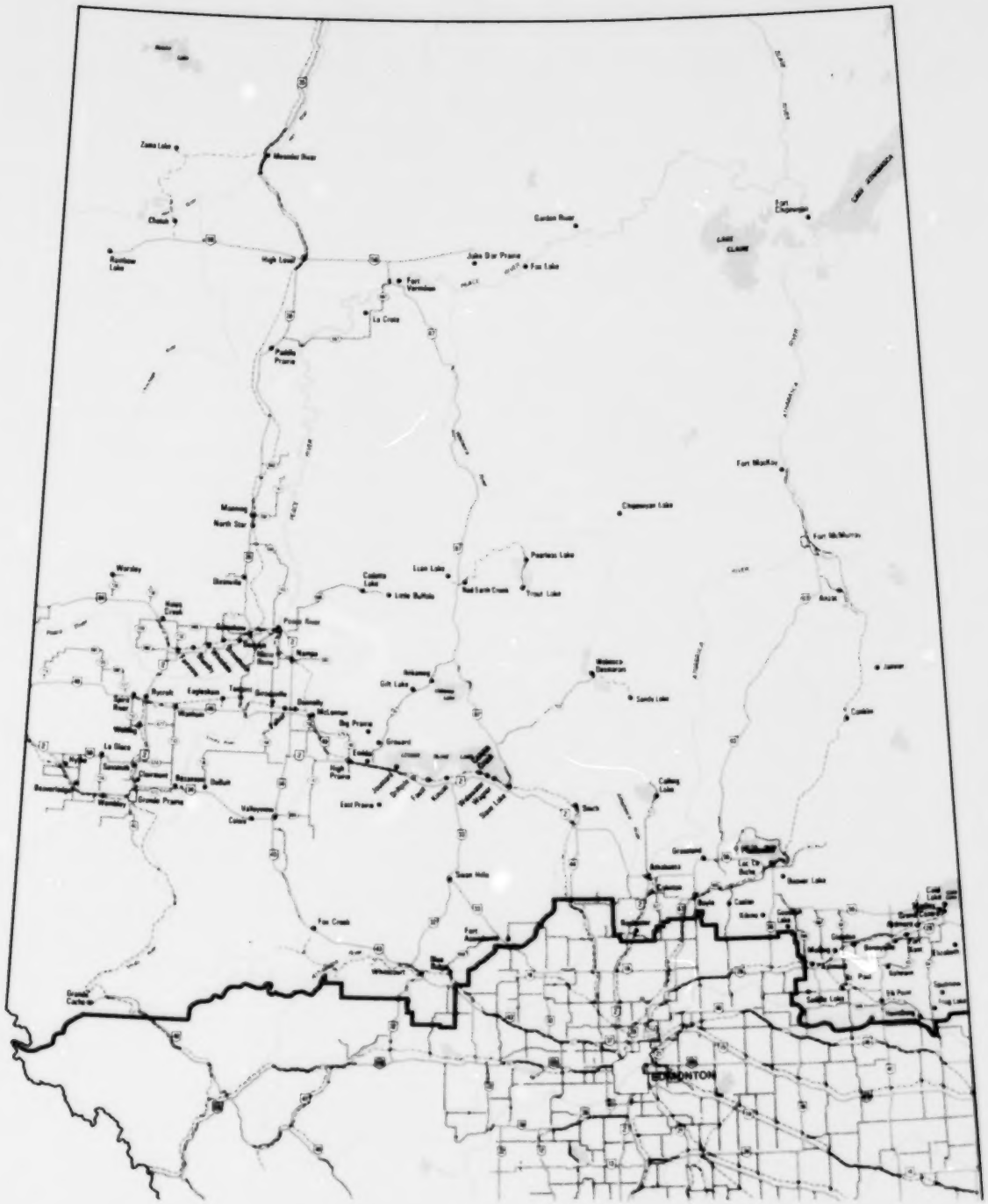
FRED GINGERICH
ATHABASCA

BERNIE HORNBY
FOX CREEK

DONALD KEITH
FORT McMURRAY



TED SONNTAG
HOTCHKISS



NORTHERN ALBERTA DEVELOPMENT COUNCIL AREA

COMMUNITIES WITH POPULATION OVER 75 (1991 CANADA CENSUS)

PRIMARY HIGHWAY — SECONDARY ROAD ------ L.O.C. ROAD ------ RAILWAY

PRODUCED BY THE ALBERTA BUREAU OF SURVEYING AND MAPPING © 1995

Map 1

WATER IN NORTHERN ALBERTA

November 4, 5, & 6, 1987
Grande Prairie Inn
Grande Prairie, Alberta

AGENDA

Day One **Wednesday, November 4**

1:30 - 1:45 Opening Remarks

Dr. Bob Elliott, MLA, Grande Prairie
Chairman of the NADC

Greetings from the City of Grande Prairie Mayor Dwight Logan

1:45 - 2:15 Address by the Hon. Ken Kowalski
Minister of Alberta Environment

2:15 - 3:00 An Overview of Water in Northern Alberta

Moderator: Fred Gingerich, NADC, Athabasca

Presentation by DPA Group
Barry Hall, Vice President
Al McPhail, President, W-E-R Engineering

3:30 - 4:45 Panel Discussion of Water Issues in Northern Alberta

Moderator: Fred Gingerich, NADC, Athabasca

Margaret Lounds, Alberta Water Resources Commission
Gerald Raspberry, ID #21
Simon Waquan, Fort Chipewyan Community
Gary Webster, Canadian Petroleum Association
Don Appleby, Grand Centre Community Advisory Committee
Peter Melnychuk, Assistant Deputy Minister, Alberta Environment

4:45 - 6:30 Audio-Visual Presentations and Display Area Viewing

7:00 - 10:00 Dinner

Moderator: Chief Mike Beaver, NADC, Desmarais

Address by Michael Keating, author of *To The Last Drop*

Day Two **Thursday, November 5**

9:00 - 9:30 Orientation for the Day

Moderator: Dr. Bob Elliott, MLA

9:30 - 11:45 Sessions Period 1

W-1 Groundwater Management

Chairperson: Mary Bennett, NADC, Elk Point

Panelists: Ed Gillmor, BP Resources
Lewis Fahner, Alberta Environment

W-2 Community Water Supply

Chairperson: Bernie Hornby, NADC, Fox Creek

Panelists: Mike Znak, Transportation & Utilities
Jim Reynolds, Mayor of Fairview

W-3 Farmland Erosion and Drainage

Chairperson: Eugene Dextrase, NADC, High Level

Panelists: Bruce Elson, W-E-R Engineering
Willie Janssen, Chairman, ID #20

W-4 Surface Water Quality -

Chairperson: Don Keith, NADC, Fort McMurray

Panelists: Hal Hamilton, Hydro-Qual Ltd.
Akio Masuda, Alberta Environment

W-5 Watershed and Wetland Management

Chairperson: Fred Gingerich, NADC, Athabasca

Panelists: Murray Hampshire, Ducks Unlimited

Don Young, Environmental Management Associates
Alf Birch, Alberta Agriculture

W-6 Farms and Rural Water Supply -

Chairperson: Reg Adam, PFRA

Panelists: Hank Larson, PFRA
Jack Newman, Fort Vermilion

W-7 Tourism, Recreation and Fisheries

Chairperson: Marcel Ducharme, NADC, Bonnyville

Panelists: Colin Jeffares, Travel Alberta
Dave Fernet, Environmental Management Associates

W-8 Industrial Water Uses

Chairperson: Jim Peacock, Shell Canada

Panelists: Ron Hicks, Alberta Environment
Steve Howes, Procter & Gamble

W-9 Native People's Concerns -

Chairperson: Dave Anderson, FIGA

Panelists: Ron Wallace, Consultant to Native Groups
Simon Waquan, Fort Chipewyan
Lorraine Sinclair, Metis Association

W-10 Water Diversion

Chairperson: Bob Cronkhite, Water Resources Commission

Panelists: Fred Durrant, P.Eng.
Tom Maccagno, Lac La Biche

11:45 - 12:45 Luncheon

Moderator: Ted Sonntag, NADC, Hotchkiss

Address by Alberta Water Resources Commission

1:00 - 2:45 Session Period 2
W-1 to W-10 will be repeated.

3:15 - 5:00 Session Period 3
W-1 to W10 will be repeated.

6:30 - 9:00 Dinner

Moderator: John Drobot, MLA, NADC, St. Paul

Report Back from Sessions

9:00 - 11:00 Special presentation by Grande Prairie's Second Street Theatre Group.

Day Three **Friday, November 6**

9:00 - 9:45 Orientation for the Day

Moderator: Dr. Bob Elliott, MLA

Overview of Common Themes by DPA Group

10:00 - 12:00 Small Group Discussions Focusing on Common Themes and Recommendations.

12:00 - 2:00 Luncheon

Moderator: Eugene Dextrase, Vice Chairman, NADC

Report Back from Small Groups

Summary Address by Michael Keating

Closure by Dr. Bob Elliott, MLA

INTRODUCTION

A primary mandate of the Northern Alberta Development Council (NADC) is to encourage public participation in the development of northern Alberta. One method used to achieve this is to sponsor conferences on topics of current relevance and importance to northerners.

The Council designated the issue of water and its management as the theme for its activities in 1987. Approximately 221 briefs related to water issues had been received by the NADC in the past 10 years and many recommendations from previous conferences and workshops had in some form raised issues and questions regarding water management and its effects on the development of the North.

The Council met with the Alberta Water Resources Commission and the Minister of Alberta Environment in the fall of 1986 in preparation for a major Conference on water to be sponsored by the NADC in the fall of 1987.

Given the broad range of issues related to water, the complex regulatory and jurisdictional basis for government activity in water management, and the technical nature of water resource issues, the Council saw the need for a general background document to consolidate information and support discussion at the Conference. A steering committee was struck to guide the preparation of the background document in August of 1986.

Committee members were selected from government, industry, and the general public. Steering Committee members included:

Fred Gingerich, NADC, Athabasca
Don Appleby, Community Advisory Committee, Grand Centre
Warren Johnston, Mayor, Cold Lake
Alice Taylor, Community Health Nurse, Wabasca/ Desmarais
Jim Peacock, Shell Canada Ltd., Peace River
Herb Wilcox, Farmer, Beaverlodge
Reg Adam, Prairie Farm Rehabilitation Administration, Edmonton
Bob Walter, Mackenzie Regional Planning Commission, High Level
Fernand Turcotte, Councillor, Municipal District of Smoky River
Bob Cronkhite, Executive Director, Water Resources Commission
Lynne Kemper, Research Director, Water Resources Commission
Peter Melnychuk, Assistant Deputy Minister, Alberta Environment
Kevin O'Neil, Manager to the Deputy Minister of Alberta Environment
Linda Beltrano, Project Director, Northern Development Branch
Jerry Archibald, Director, Research & Analysis, Northern Development Branch

The Steering Committee established terms of reference and issued a call for proposals. In January, 1987, a contract was awarded to the DPA Group Inc. in association with W-E-R Engineering, and Environmental Management Associates. Work on the report began immediately.

The objectives of the pre-conference study were:

i) To identify and document key issues relating to water and water management which presently affect or will affect northern Alberta
ii) To document the present status of water management programs and policies affecting water in Alberta with emphasis on the implications for northern Alberta
iii) To identify present and possible future water uses
iv) To identify constraints related to the development of future uses as noted in objective (iii)
v) To identify key potential policies and programs dealing with water management which would be beneficial and practical to northerners.

Six focus group sessions and two regional workshops was the key method for issue identification and public involvement. The approach taken in preparing the report was that it be "issue-driven". The input received from the public has guided the topics addressed and the information presented. The report also presents, for each issue identified, a list of suggested actions arising from the public consultation process. The process undertaken is identified in Figure 1 and explained in detail in the final Technical Report. The reader is encouraged to consult and review the WATER IN NORTHERN ALBERTA TECHNICAL REPORT DECEMBER 1987.

THE STUDY AREA

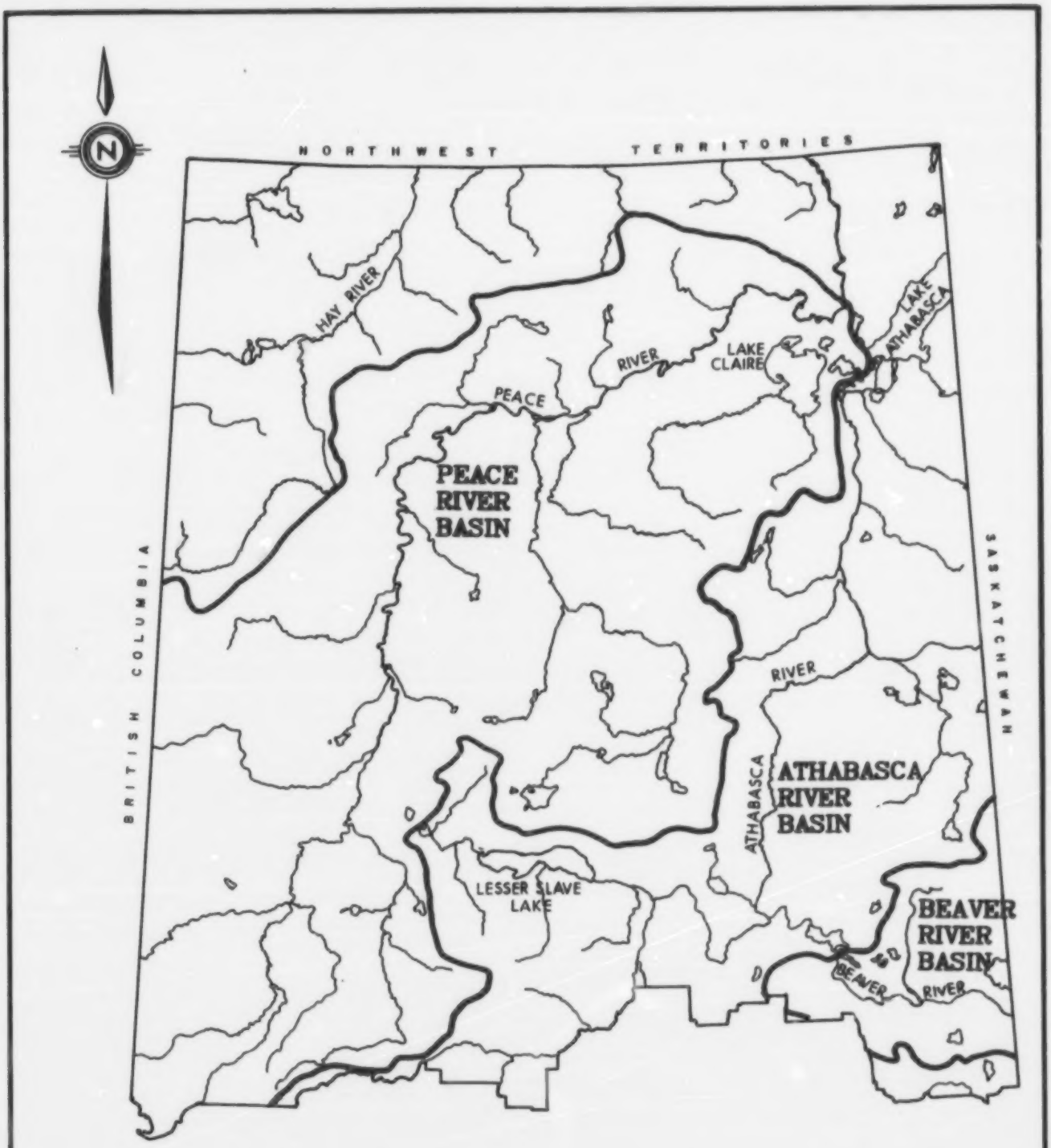
The Technical Report and project focused on three predominant river basins in northern Alberta:

i) Peace River Basin
ii) Athabasca River Basin
iii) Beaver River Basin

The geographic boundaries of these basins are presented in Exhibit 1.1.

A substantial portion of the Athabasca Basin in the upper reaches lies outside of the NADC boundary. While public input from outside the NADC area was not solicited, effects of activities (principally forestry, coal mining, and oil and gas development) in the upper reaches of the Athabasca will have effects upon downstream users. Where significant, these effects have been noted in the Technical Report.

There are several smaller basins at the northern boundary of the province (Liard, Hay, Buffalo, Slave and Lake Athabasca). While these basins do not support the extent of economic activity that the three major basins do, there are a number of issues in these basins that will likely parallel those identified in the major basins (e.g., surface disturbance, hydro-electric development, interjurisdictional arrangements). Where significant these issues have also been noted.



LEGEND

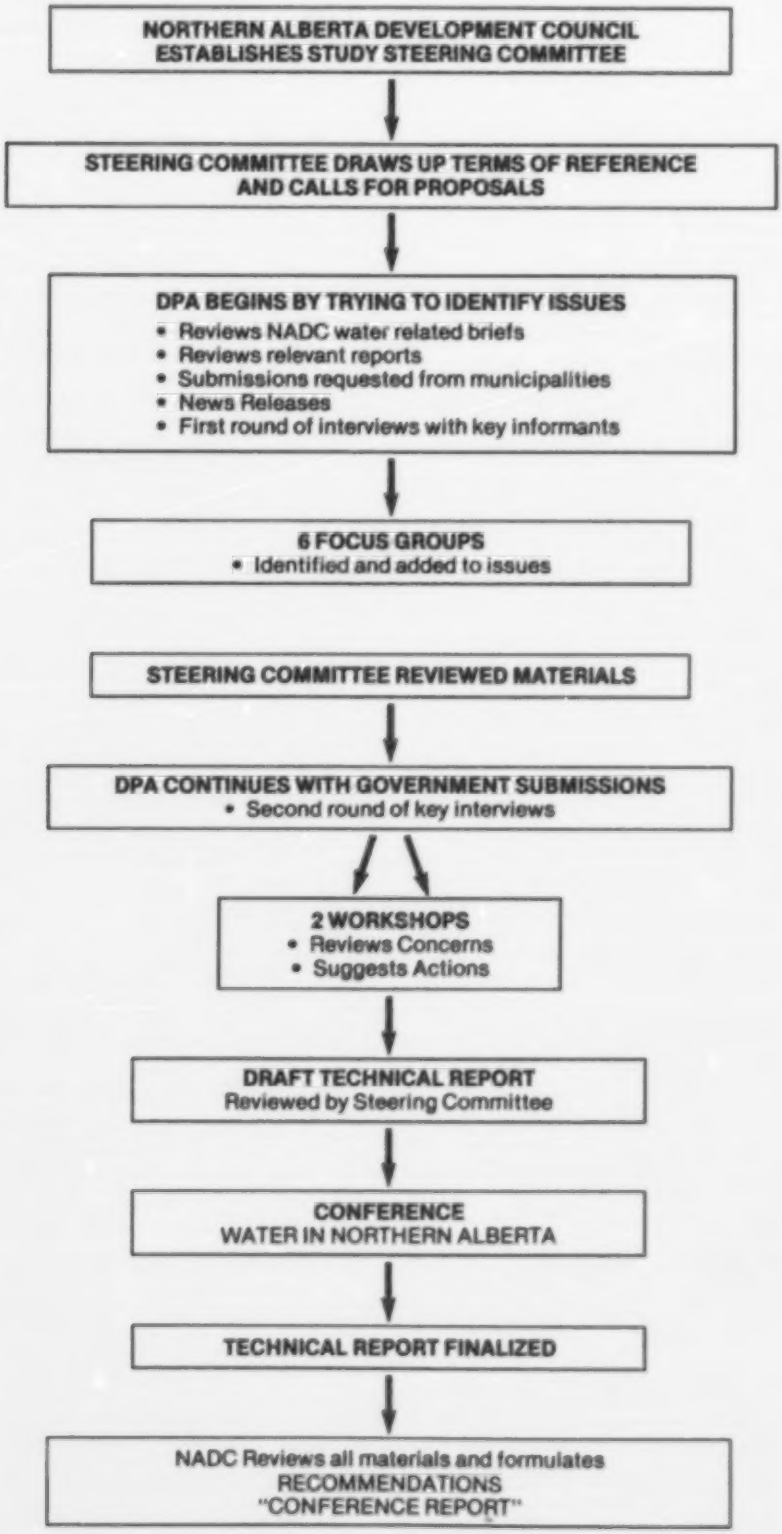
MAJOR RIVER

BASIN BOUNDARIES

STUDY AREA SHOWING MAJOR NORTHERN RIVER BASIN BOUNDARIES
EXHIBIT 1.1

PROJECT PROCESS

Figure 1


NORTHERN ALBERTA DEVELOPMENT COUNCIL
ESTABLISHES STUDY STEERING COMMITTEE
STEERING COMMITTEE DRAWS UP TERMS OF REFERENCE
AND CALLS FOR PROPOSALS
DPA BEGINS BY TRYING TO IDENTIFY ISSUES
• Reviews NADC water related briefs
• Reviews relevant reports
• Submissions requested from municipalities
• News Releases
• First round of interviews with key informants
6 FOCUS GROUPS
• Identified and added to issues
STEERING COMMITTEE REVIEWED MATERIALS
DPA CONTINUES WITH GOVERNMENT SUBMISSIONS
• Second round of key interviews
2 WORKSHOPS
• Reviews Concerns
• Suggests Actions
DRAFT TECHNICAL REPORT
Reviewed by Steering Committee
CONFERENCE
WATER IN NORTHERN ALBERTA
TECHNICAL REPORT FINALIZED
NADC Reviews all materials and formulates
RECOMMENDATIONS
"CONFERENCE REPORT"

THE STUDY PROCESS

Prior to the Conference held in November, 1987, public consultation was obtained through interviews, focus groups and workshops across northern Alberta involving some 300 people. Literature, including briefs to Council, also led to the Technical Report and the Conference.

Review of NADC Briefs

Some 221 briefs submitted to the NADC over the past five years were identified as having content broadly pertaining to water resources. Summary information on each brief was extracted. This information along with information from key informant interviews, approximately 50 in all, formed the Scoping Report used by participants at focus group sessions.

The distribution of briefs was as follows:

i) Peace River Basin	102
ii) Athabasca Basin	72
iii) Beaver Basin	35
iv) Other Unclassified	12
	221

The briefs were classified in terms of five general topic areas:

i) Agriculture	23
ii) Industry (non-water based resources, e.g., forestry, coal, oil and gas)	13
iii) Industry (water based resources, e.g., trapping, commercial fishing)	17
iv) Recreation, Tourism, Conservation	74
v) Municipal/Domestic Water and Sewer	86
vi) Other/unclassified	8
	221

A number of comprehensive planning studies were reviewed for basic information on water resources and for further identification of issues.

Bob Elliott, MLA, Chairman, NADC, sent introductory letters explaining the scope and purpose of the background study and follow-up letters inviting written or verbal submissions to some 100 elected representatives, local administrators and community leaders. As well, there were information releases soliciting public opinions and concerns on water management in northern Alberta.

Interviews were held with 41 key informants across the North. Individuals were selected on the basis of their knowledge of, and involvement with, water management issues. The range of people formally interviewed was diverse, including farmers, agrologists, municipal leaders, sewer and water engineers, forest superintendents and native representatives.

In addition to the interviews, contacts were established with government departments including Alberta Environment, Alberta Agriculture, Alberta Municipal Affairs, and Alberta Forestry, Lands and Wildlife among others.

Focus Groups

In March, 1987, six regional focus group meetings were held across northern Alberta – Beaverlodge, McLennan, High Level, Slave Lake, Lac La Biche, Fort McMurray. Invitees included representatives of local government, the agricultural sector, economic development bodies, industry, Indian bands, Metis settlements, fish and wildlife associations, tourism and recreation groups and other interested persons. The purpose of the meetings was to obtain perspectives on water issues of regional or local importance.

The participants reviewed and added to water management issues which had been identified through the initial interviews and literature search. Primary concerns identified by the focus groups included groundwater management; municipal/community water supply; erosion and drainage of agricultural lands; farm water supply; surface water quality/control of pollution from wastes and effluents; wetlands/ shoreland management; watershed management/surface disturbance control; development of water-based recreation and tourism; industrial water requirements; program co-ordination, education and information; flood prevention; water diversion/interbasin transfer; and enhancement and protection of commercial fishing. Many issues identified became the basis for discussions at the workshops held later and at the November Conference.

Review of Submissions

Detailed submissions of policy and program information were received from the provincial departments of Environment; Agriculture; Forestry, Lands and Wildlife; Municipal Affairs; Community Health; Recreation and Parks and from the Federal Parks Canada, and Indian and Northern Affairs Canada. Information was also received from the provincial Energy Resources Conservation Board (ERCB). A summary was made of programs related to water management in Alberta and the roles and responsibilities of various government agencies.

Written submissions from community groups, local authorities and individuals were also received and reviewed. These were added to the comprehensive identification of issues and used in background documents to workshops and the Conference.

Preparation for the Workshops

Every attempt was made to follow up on issues and concerns identified by focus group participants in order to prepare properly for the workshops which followed.

Follow-up interviews were conducted with native groups, contacts within provincial departments and others identified in the focus group meetings.

Additional technical assessments were reviewed and directed to experts assigned as sub-consultants to the core project team.

A workshop package was prepared for the next stage.

Workshops

Over 300 individuals across northern Alberta were invited to the regional one-day workshops held in June. Approximately 50 delegates attended the workshop in Grand Centre and 100 participated in the Fairview workshop.

Delegates received workshop participation packages in advance. The primary goals were to confirm water resource issues of importance to northerners, to exchange information and to address related questions. Another purpose was to provide guidance to Conference organizers re topics that should be carried forward for consideration at the Conference. The workshops were also used to initiate thought and discussion on practical solutions to water management problems and future directions for water management in the North. Thirteen major topic areas were identified.

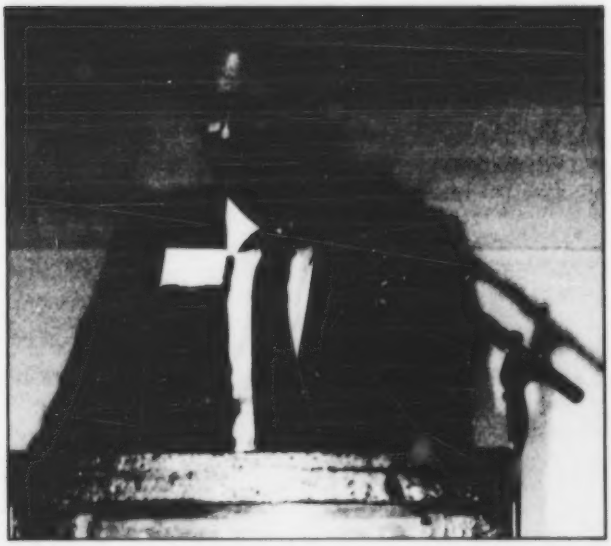
Comments were then consolidated into 10 areas and incorporated into a Technical Report distributed in advance of the Conference to delegates. This document is available from the NADC office in Peace River.

Conference

More than 800 invitations were sent to individuals inviting them to the Water in Northern Alberta Conference, November 4, 5 & 6, 1987. Media coverage was extensive. Over 220 delegates participated.

At the three-day event northerners reviewed the issues and suggested actions of the focus groups and workshops, and identified recommendations to be brought forward by the NADC. An excellent forum was provided for all sectors to meet and discuss their viewpoints. A great deal of networking and information sharing took place at the Conference.

DAY ONE



Opening Remarks

Bob Elliott, MLA, Grande Prairie, and Chairman of the Northern Alberta Development Council opened the Conference by welcoming the 223 delegates. He noted the importance of water to northerners and the role of the NADC in obtaining their viewpoints on the management and preservation of this most valuable of northern resources. Dr. Elliott introduced the members of the Council, the Alberta Water Resources Commission and several other noted dignitaries before calling on the Mayor of Grande Prairie to bring greetings from the community.

Dwight Logan, Mayor of Grande Prairie, welcomed delegates to his City. Mayor Logan stressed that this was a conference for northerners and that the more northerners get together to discuss their views the better off the North will be. He noted the importance of the topic saying water is one of the very building blocks of life. Mayor Logan wished the delegates well and encouraged them to visit points of interest in Grande Prairie.

Bob Elliott then called upon the first speaker for the afternoon, Hon. Ken Kowalski, Minister of Alberta Environment.

Address by the Minister of Environment

Hon. Ken Kowalski prefaced his remarks by placing a great deal of importance on the discussions taking place at the Conference and commending the Northern Alberta Development Council for challenging northern Albertans to focus on water issues – a valuable northern resource.

Mr. Kowalski noted that managing Alberta's water resources is a complex and demanding job, with a different set of water problems affecting the north and south of the province. Northern Alberta has a massive surplus of water for its required consumptive needs but is faced with drainage and flood control problems. The south on the other hand has access to about 13% of Alberta's available water but has 80% of the demand. Thus north and south, with different problems, require different solutions.

Mr. Kowalski identified the province's present water policies. Alberta's water resources are managed on a

river basin system. The Alberta Environment publication, *Water Resource Management Principles for Alberta*, outlines the guidelines and philosophy of water resource management in Alberta. A key principle referred to by the Minister states: "Water in each of Alberta's six major river basins must by fully utilized before inter-basin augmentation could be considered."

The Minister assured delegates that Alberta has a long way to go before water in each of these basins will be fully utilized and emphatically reaffirmed that there will be no change in Alberta Environment's support and commitment to this particular management principle. He also stated that Alberta Environment will not be party to any suggestion that Alberta's water is for export.

The safekeeping and protection of the environment must be a partnership between Alberta Environment, municipal authorities, industry and the public. Public participation, according to Mr. Kowalski, in environmental issues must remain the rule.

During the last several years the government has invested nearly $70 million in water resource projects in the northern portion of our province. In total there have been 116 projects of which 35 were totally funded by the province and 81 cost shared with local authorities.

Mr. Kowalski also addressed the issue of jurisdiction of agreements, noting that as the guardians of the head waters of several of the great rivers of this continent, Alberta has a serious obligation to treat its neighboring provinces in a fair and responsible manner and to continue its vigorous approach to secure inter-provincial understanding.

Specific to the Peace River Basin, the Minister indicated that a sub-basin water management planning study is underway. "The study recognizes the region has need for a relatively large scale mitigation program for its water related problems....be they specific to water quantity or that of water quality."

Water quality is a prime area of concern to Alberta Environment. Alberta has the most extensive drinking water monitoring program in Canada. It is the only province requiring municipal and waste water operators to be certified.

Mr. Kowalski also stressed the need to be prepared to respond to future increased water demand by industry and manufacturing sectors.

He stated: "I am not prepared to compromise my position regarding water quality under any circumstances. The unchanging priority is and will continue to be the protection of Alberta's rivers...by insisting on tough standards now we will be keeping the long-term environmental interests of Alberta in mind....A comprehensive planning study for the Athabasca River Basin is already underway along with studies assessing alternate treatment technologies for pulp mill effluents and the impacts of the industry along the Athabasca River system.

"A pro-active approach is being taken to understand dioxins and their effects on the environment and health....a program for testing is underway, collection of data on ambient levels is being done, risk assessment of the effects is being conducted and research world wide is being monitored."

The Minister announced that the use of methoxychlor in the Athabasca River for black fly control will not be approved in 1988 saying that alternatives will be explored.

Also discussed by the Minister were the implications of Alberta Environment's new mission statement: "To achieve the protection, improvement, and wise use of our environment now, and in the future." He said this is a new direction for Alberta Environment and will mean a tougher approach to environmental protection and enforcement. Water resource staff is currently reviewing all legislation which governs surface and groundwater.

Mr. Kowalski concluded by encouraging municipal officials, industry and environmental experts to continue to share information and points of view on matters of mutual concern and interest.

Bob Elliott then turned the chair over to Fred Gingerich, NADC Councillor from Athabasca, and member of the study steering committee. Mr. Gingerich introduced Barry Hall, Vice-President of DPA Group, and Al McPhail, President of W-E-R Engineering, both of the study research team. They reviewed the process used in developing the background Technical Report and the key issues gleaned from discussions with northern residents.

Consultant Overview

Barry Hall reviewed the process involved in producing the document (see Figure 1). He noted that the consulting team had contact with over 300 northerners and was gratified by the response and interest shown.

He identified the first phase of data collection as the review of NADC briefs, other literature, interviews, and small group focus sessions. The intent was to obtain a broad identification of the issues and to bring the diverse groups and interests together to begin to network and dialogue over the issues.

The second phase was the Workshop phase in which 150 people met to discuss the concerns and issues to organize these into topics and to priorize and develop initial suggested actions.

From the consulting team's perspective, the process was very successful in determining what northerners perceive as the major issues and concerns related to water. The process raised the consciousness of northern residents to the topic and allowed participants to share issues and explore the complexity of the topic.

Al McPhail pointed out that few countries exist where one can still pick up a glass of water and safely drink it. Northern Alberta is rich in water but has areas where

access is difficult, where quality is questionable, where supply is limited, etc. We must act now to protect our water resources and to manage them efficiently and effectively.

He reviewed the Peace, Athabasca and Beaver river basins and the issues and concerns arising from the focus groups, the workshops and a special visit to Fort Chipewyan.

Mr. McPhail noted three general overriding issues along with 10 specific issue areas.

General Issues

1. Protection and conservation of water – the longevity and quality of drinking water supplies is of key importance.
2. Economic development and the environmental consequences – economic development and, specifically, industrial development, are necessary and important but everyone strongly expressed a desire to protect the environment.
3. Regional variations - there were some generalizations but within each region there was usually an outstanding topic. For example, good quality groundwater supplies was a dominant theme in the northeast sector of the NADC area, potable water supplies was paramount to remote communities and the lack of water-based recreational areas was noted in the far northwest area. One could go on but it is significant to note the diversity and complexity of the issues.

Mr. McPhail commented upon the universality of many of the issues, for not only are they common to northern Alberta but they are significant on a national as well as global scale.

TEN KEY ISSUES

1. Groundwater
   - Groundwater is an essential resource for communities and industry.
   - Increasing demands are being placed on existing supplies.
   - Must also recognize the vulnerability of groundwater and the potential for contamination.
2. Community Water Supply
   - All northern communities, especially remote and isolated ones, want adequate provisions made for potable water supplies.
3. Farmland Drainage and Erosion
   - Northern soils are uniquely susceptible to erosion, especially in the northwest of the province.
   - There is a need for sound land use planning practices and controlled release of agricultural land.
   - Need for storage retention areas to capture water during peak periods for multiple uses overlooked.
   - Shortage of program funding has caused project delays.
4. Surface Water Quality
   - Greater enforcement and monitoring is seen as the key issue in the area of surface water quality.
   - A chemical container incentive program would be useful.
   - The use of methoxychlor was regarded as a health hazard.
5. Watershed and Wetland Management
   - Land and water should be managed together as an integral unit each impacting on the other.
   - The need to maintain, retain, and enhance wetlands was recognized.

6. Farmland Water Supply
   - Farmers indicated difficulty in locating wells and maintaining dugouts.
   - Request for additional technical and financial assistance.
7. Tourism, Recreation and Fisheries
   - All three areas need protected water quality.
   - There is a growing demand for water-based recreation and tourism enhancement.
8. Industrial Water Use
   - Trade offs are necessary to maintain and attract industry and protect water supplies.
   - Need for a greater sharing of responsibilities among industry, government and the public.
9. Native People's Concerns
   - Natives stress the philosophy of man as an integral part of the environment.
   - Important issues include water quality, lake levels and involvement of native peoples in planning.
10. Water Diversion
    - Many northerners expressed a fear that water shortages in the south will be met by northern water diversion.

Mr. McPhail concluded by encouraging delegates to recognize what has taken place in the rest of Canada, e.g., Ontario and the Great Lakes. Alberta is still in a pristine state compared to many locales and it is up to us to maintain that.

Fred Gingerich then introduced the reaction panel on water issues in northern Alberta.

Panel Discussion

Margaret Lounds of the Alberta Water Resources Commission; Gerald Raspberry of ID #21; Simon Waquan, Fort Chipewyan Community Association; Gary Webster, Canadian Petroleum Association; Don Appleby, Grand Centre Community Advisory Committee and Peter Melnychuk, Assistant Deputy Minister, Alberta Environment provided comments on water issues in northern Alberta from their perspective.

Margaret Lounds

Margaret Lounds highlighted the work of the Alberta Water Resources Commission and addressed similarities between the northern and southern parts of the province. She indicated that from north to south the issues are similar but the differences are frequently in the solutions.

The Water Resources Commission provides the opportunity for MLAs, Assistant Deputy Ministers and members of the general public to get together to discuss broad-ranging issues and long-term policy. It makes recommendations to Cabinet, enhances interdepartmental co-ordination and undertakes research and analysis activities.

Mrs. Lounds noted the need for good quality water and the ownership attached to water by the general public. "Whether we are in the north or south people refer to rivers as my river, our lake – there is that element of ownership. After all, water is recognized by all as a necessity of life."

Concern over groundwater supplies and the increasing demands placed on it is common to north and south. Residents of both areas fear the loss of the supply and the contamination by deep well injections. A serious concern is effluent

discharges into streams. Recreational needs and wetland and marshland management are also very important to the province. Land clearing practices and the effects on water regimes is another concern to both north and south.

A key point of contrast is that the south is in the white zone (deeded land) and much of the north is still in green zone (Crown land). Thus, the north still has opportunities.

In addressing the question of economic development, Mrs. Lounds concluded: "Decision makers want to have economic development and how we are going to have economic development without damaging the precious resource, water, is our challenge."

Gerald Raspberry

Gerald Raspberry, an Improvement District Councillor, highlighted some key water management issues which affect the IDs. He said drainage and flood control on farm lands is of primary concern, especially in the Peace River block. Because of the highly erodable nature of the soils, municipalities face costly measures to control flooding and erosion of farmland. These problems tend to snowball so that local jurisdictions cannot cope. There is a need to plan for water management before construction of roadways, release of Crown lands for farming, or draining of natural water retention areas.

Requests to the provincial government for increased funding for water management projects have resulted in more provincial participation, but no increase in dollars for water management programs.

Mr. Raspberry called for an extensive public awareness campaign. He also noted that the lengthy process of design and approval for small on-farm projects often frustrates the farmer to the point of premature action.

He called for a one-window approach to water management issues and the streamlining of Alberta Environment to facilitate such an approach.

Another area of concern was quality and quantity of surface and ground water. Provincial policy should protect quality and steps should be taken to ensure long-term availability of good water for residents of both rural and urban municipalities.

He also felt impacts of development and industrial activities should be determined through close monitoring and joint consultation.

Finally, Mr. Raspberry noted: "We fully realize that issues exist from different perspectives and that only co-operation between all interested groups and government will provide for the successful management of this precious resource."

Simon Waquan

Simon Waquan noted that he represented the oldest community in Alberta, Fort Chipewyan, and that 1988 is the community's 200th birthday.

He said: "We as Indian people have traditionally believed in protecting the environment whether it be water or land. In anything that you do in the future always remember – It's Mother Earth who provides. If you destroy Mother Earth for the sake of industry or advancement we'll all pay the price for it in the end."

Fort Chipewyan's economy is based on a traditional lifestyle – hunting, trapping, fishing. Since the Bennett Dam water levels in the delta have dropped and the impacts on the community are serious. The fur industry diminished, barging of goods from Fort McMurray became difficult, waterfowl diminished and the lifestyle of the delta people changed. Restoration projects have begun and changes are beginning to be observed. He indicated: "It's no use crying about it; if we are going to work we have to respect and take care of our environment. Water is our responsibility. It's our responsibility to make the governments adhere to our

wishes. Let's strive to protect our environment and our environment will look after us."

Gary Webster

Gary Webster of the Canadian Petroleum Association noted a common theme – "Communication". Each stakeholder in water has information to share with other stake holders. The difficulties lie in identifying who wants information, what type they want, what they want it for and at what depth. The real challenge is to keep the dialogue going. Mr. Webster concentrated on Chapter 6 of the Draft Technical Report which focuses on communication and mutual understanding.

The chapter identifies several key areas for recommendations. Mr. Webster placed them in priority as listed below.

1. Budget – Priorities must be agreed upon for maximum benefit at minimum cost.
2. Policy direction – Industry and government need clearly defined policy.
3. Monitoring and enforcement – Industry supports strict enforcement and prosecution of offenders and violators.
4. Stake holder information sharing – Industry, government and the public are the stakeholders. What level of detail do we need? Feedback is necessary.
5. Integrated planning – Not all resources are planned on a river basin basis. We need agreement on planning areas and recognition that plans are not cast in stone. All stakeholders need to be involved early.
6. Research – What type and what priority do we give to the research we identify?
7. Consultation between industry and NADC – Is there a need for greater communication?

Mr. Webster closed by encouraging interested individuals to contact the Canadian Petroleum Association with concerns or questions.

Don Appleby

Don Appleby addressed the comments of previous speakers. He noted that he had to ask if all has been done. What is the sense in asking if Alberta Environment has taken care of all the problems? Everything is not well when the smallest drainage area (Beaver River Basin) has the largest demand for water placed on it. Two factors govern the development of heavy oil: the market price of oil; and the water to develop it.

Mr. Appleby maintained that if it's not economically feasible to protect water it will also not be economically feasible to fail to protect it!

He noted the conflict in uses in the Beaver Basin. Tourism studies have identified the area as potentially high in tourism capability yet, "the lakes are drained for industrial use." This is a real conflict. Greater co-ordination among government agencies is necessary.

Peter Melnychuk

Peter Melnychuk, of Alberta Environment, pointed out the importance of public input. Water truly belongs to all of us. Each individual has a legitimate concern about water management and a right to express opinions. The challenge to manage Alberta's water resources rests with all of us.

Intergovernmental co-operation was another theme in Mr. Melnychuk's address. Interprovincial agreements are vital and Alberta will continue to co-operate fully

with other provinces managing trans-boundary rivers and streams.

He reaffirmed the commitment identified by Hon. Ken Kowalski to ensure water in each river basin is used effectively and efficiently. He acknowledged Alberta Environment's highly qualified support staff who provide information on request to the public and municipalities.

Alberta Environment provides funding assistance to local authorities and ensures proper planning involving local people. Alberta Environment also provides direct assistance to the public. In excess of 1800 inspections were conducted last year.

As Mr. Melnychuk concluded, he stressed that there was much more to do, and that Alberta Environment needs the advice of delegates, and will assist where possible.

At the conclusion of the panel presentations, Mr. Gingerich asked for comments from the floor. Delegates noted that water is a national issue and that the federal influence should be recognized. The lack of participation by Alberta in the Canadian Heritage River Systems was noted. Delegates also identified confusion in determining responsibility and the need for a one-window approach.

The afternoon activities terminated with delegates viewing several films and the display areas. (See Appendix.)

The evening session opened with Chief Mike Beaver, NADC Councillor from Desmarais, welcoming the delegates to the banquet and introducing keynote speaker Michael Keating. Mr. Keating is the environmental editor for the *Globe and Mail* and author of *To The Last Drop: Canada and the World's Water Crisis.*

Keynote Address by Michael Keating

Michael Keating began with a simple message: "Look at the mistakes that others have made and do not repeat them...you too can have a Love Canal if you want to, but you do not have to have one if you take steps now to avoid it. The reason that people get into these messes is that they take their environment, and especially their water, for granted until it is too late and then they get the bill to clean up the mess and those bills are staggering. You, on the other hand, have a relatively pure environment.

And you have the chance to save your environment

from the same kind of bad decisions." He saw encouraging signs in Alberta such as the Swan Hills toxic waste disposal site, the first of its kind in North America.

Mr. Keating introduced delegates to the process of sustainable development. That is, doing business in a way that does not destroy the environment — the tying together of human needs of drinking water, sewage treatment, recreation, hunting, fishing and trapping along with the modern industrial needs of big farming, ranching, hydro power, oil, gas, pulp and paper.

About 87% of Alberta's water flows north through the Peace-Athabasca system to the Arctic Ocean but 80% of the demand in this province is in the dry south. There is a tremendous fluctuation of river levels from year to year. This unreliability of prairie water coupled with increasing demand has resulted in more than a dozen prairie rivers that already face periodic rationing. These include parts of the Milk and St. Mary and both North and South Saskatchewan river systems. Serious water supply crises are being created when half the nation's farm crops are produced in the prairies and parts of southern B.C. which have only 4% of the country's water.

He pointed out that pollution, more often thought of as a problem of the industrialized east, is rearing its ugly head in the west as well. Tens of thousands of tonnes a year of pesticides and fertilizers are dumped onto western soils and part of this is washed into lakes, rivers and sloughs. Wastes from Edmonton have been tracked as far as eastern Saskatchewan and, in northern Alberta, pulp mill wastes are found more than 100 km from their source. The constant addition of fertilizers will turn more and more ponds and lakes into bowls of green soup in a process called eutrophication.

Wildlife is in serious trouble on the prairies. World Wildlife Fund Canada has launched a program to try to save some species from extinction. Canada and the United States are spending some $100 million in the North American Waterfowl Management Plan, mainly to preserve some wetlands so waterfowl will not continue to disappear.

Forestry and related industries can have a serious impact on watersheds. According to Mr. Keating, only one-half of northern forests are committed for cutting. That means northerners still have time to measure the impacts of forestry and decide what they want done in the future. "Now is the time to create parks and biological reserves before the land is carved up and all the good areas are put under private control," urged Mr. Keating.

Although pulp mills have historically been messy operations, technology exists to very dramatically reduce, if not totally eliminate, waste. Mr. Keating predicted there will be a demand not only for the cleanest technology in new mills but that old mills upgrade pollution controls.

Mr. Keating also commented upon the oil and gas industry's demand for fresh water. A spill from the oil sands area in 1983 closed fisheries and tainted fish from the Athabasca River.

There have been arguments over the proposed pipeline to bring water from the North Saskatchewan River to the Cold Lake area for heavy oil upgrading. "I am encouraged to see people talking about recycling most of the water used for oil recovery. This will reduce the amount of polluted water to be disposed of, either by dumping into rivers or pumping underground."

In future, warned Mr. Keating, other forms of industry will make demands on fresh water. Often industry demands the right to pollute to so-called "acceptable levels" which, if carried to the logical extreme could create a situation where there are no pristine rivers.

He challenged delegates: "You have the advantages of being able to prevent such discharges from happening in the first place in most areas now, thus avoiding the costly and politically difficult job of ordering an expensive cleanup afterwards."

Hydro projects with their big power dams will be among the most contentious issues that northerners in this and virtually every other big province will have to face. Since 1968, the W.A.C. Bennett Dam on the Peace River in British Columbia has changed the water flow all the way down to the Peace-Athabasca delta.

Water diversions are the most controversial of all water issues. They have mainly one purpose: farm irrigation. The irrigation capital of Canada is Lethbridge. As the area uses up its own reserves, diversion from the North is appealing. Another aspect is that of rational water pricing. The true cost of moving water and the value of crops produced should be balanced against the value of leaving water where it is or using it for some other purpose.

Many believe the United States wants Canada's water but such water transfers as the Grand Canal scheme are too expensive.

He also warned of new environmental impacts such as the greenhouse effect. Carbon dioxide, along with other gases from industry and from some forms of agriculture, are forming an invisible heat shield in the atmosphere. This will trap more and more of the heat normally radiated into outer space and will keep it close to the ground. Temperatures will rise. We will probably start to notice this in a decade or so. It will amount to the greatest change in human civilization in the 10,000 years of recorded history.

Recently Canadian resource and environment ministers appointed a national task force on environment and economy. That group comprises environment ministers, including Alberta's Ken Kowalski; top executives from some of the country's biggest polluters, like Inco, Dow, Noranda and Alcan; and environmentalists. If their recommendations are adopted they could set the scene for fundamental change in Canada.

Canada with the provinces would develop conservation strategies to help set direction for sustainable economic growth. "This marks the first time that people have tried to put the economy and the environment in perspective....I would encourage you to expand that into a serious look at the overall state of your environment, including its land, air and wildlife," Mr. Keating advised.

People must speak up and send messages to governments so no one is left out of the critical debates coming up in the near future. "You must produce something which has a moral and ethical content. It must set guidelines for what you want to accomplish and what you want to do and to be in the future."

He concluded with a challenge. "Few people in the world have taken their future into their own hands to such a degree. You have the chance to be among the leaders."

DAY TWO

Day two began with a plenary session to review the day's procedure.

Ten workshops, run three times, would allow each delegate the opportunity to participate in three topic areas. The format provided at least two resource people, experts in their field, to animate each workshop. The selection of workshop topics was based on the material identified by participants of the focus groups and workshops held in Fairview and Grand Centre.

SUMMARY OF WORKSHOPS

W-1 GROUNDWATER MANAGEMENT

Chair: Mary Bennett, NADC, Elk Point

Panelists: Ed Gillmor, BP Resources
Lewis Fahner, Alberta Environment

Theme

The quality and availability of groundwater varies considerably across the North. Groundwater resources are utilized in northern Alberta for a number of purposes including household and stockwater uses in rural areas, provision of municipal supplies to communities and by the oil industry for water-flood oil recovery or steam-driven in situ oil recovery. Three factors have led to concern about the protection and assurance of groundwater quality and quantity: increasing demand indicates recognition of its limited supply; advances in technical understanding of surface water/groundwater interactions; and emerging evidence of the vulnerability of groundwaters to contamination and quality degradation resulting from human activities.

Key Concerns:

- Groundwater Contamination
- Surface Disturbance Impacts
- Industrial Withdrawals
- Resource Inventory
- Abandoned Wells and Drill Holes
- Public Information and Problem Referrals

Suggested Actions

GROUNDWATER CONTAMINATION

Landfill Sites

1. New and old landfills should be continually monitored to ensure that contamination of groundwater is identified, investigated and corrected.
2. New landfill sites should be subject to an approval system and monitored on a continual basis by authorities.
3. Old landfill sites should be cleaned up and made safe.

Chemical Containers

4. Greater public compliance in disposing of chemical containers (particularly agricultural chemical containers) should be encouraged through public information campaigns, greater controls on unrestricted access to landfills, and a container incentive program.
5. Containers should be regularly collected, their contents safely disposed of and recycled in appropriate locations, e.g., Swan Hills disposal site.

Well Contamination

6. Public awareness of water quality testing should be raised to encourage regular voluntary testing of domestic wells for contamination.
7. Government should ensure there are sufficient laboratory facilities, possibly on a regional basis, available to analyze samples.

Septic Systems

8. Research should be conducted to identify functional technical answers to problems with septic systems in northern climates and soils. This information should be available to the public.

Regulations

9. Groundwater regulations and license conditions should be subject to ongoing monitoring (quality and quantity) and enforcement. License conditions should be standardized for municipalities, industry and agriculture.

SURFACE DISTURBANCE IMPACTS

Impacts

10. Further research is required into the effects of drainage and forest clearing on groundwater recharge in specific areas of northern Alberta.
11. Realistic appraisal of land capability and potential uses, including groundwater protection, should be made before authorizing land uses or releases of public land.
12. The full impact of surface disturbances should be recognized in all major land development.

Research

13. Co-ordination and co-operation among provincial departments and other levels of government should be encouraged with respect to hydrogeological research studies and allocations of land and water resources.
14. Information should be available to the public in a format comprehensible to them.

INDUSTRIAL WITHDRAWALS

Research

15. Greater emphasis should be placed on acquiring understanding of groundwater/surface water interactions. Acquisition of appropriate technical data through monitoring programs and refinement of existing models is suggested.

Industrial Withdrawals

16. The impact of all withdrawals should be thoroughly assessed prior to issue of license.
17. Adequate resource planning with due consideration of cumulative impact should take place.

RESOURCE INVENTORY

Inventory

18. Emphasis should be given to the identification of long-term potable groundwater supplies and reserves for northern communities.

Drill Holes

19. All groundwater drill holes should be registered and the regulations enforced, including domestic wells.

Co-ordination

20. Government, industry and universities should co-ordinate and focus research on groundwater to maximize the effectiveness of research expenditures; additional research funds should be available if necessary to investigate priority problems.
21. Research results in layman's language should be available to the public.

ABANDONED WELLS AND DRILLHOLES

Public Awareness

22. All wells subject to contamination should be checked and sealed as necessary and the public should be made aware of the impact of contamination and their responsibilities in regard to abandoned wells.
23. Abandoned unregistered (e.g., pre-1978) wells should be identified and sealed.

Regulations

24. Existing regulations on well abandonment need to be more rigorously enforced and extended to all users including domestic users.

PUBLIC INFORMATION AND PROBLEM REFERRALS

Layman's Language

25. Existing and on-going data and information on groundwater quality should be available in a language and format which is understandable to laypersons.
26. Policies and procedures related to groundwater should be communicated to the public in understandable language.
27. There should be a co-ordinated exchange of information among responsible agencies, industry and the public.

Groundwater/Surface Water Relationship

28. Alberta Environment and industry should work

together to educate the public on technical matters related to groundwater/surface water interactions.

Regulation and Complaints

29. Public complaints regarding impact of industrial activities on domestic wells, should be addressed through advertising to create public awareness of the complaint registration, investigation and redress process.

30. A central source of information and point of contact for complaint reports is suggested.

W-2 COMMUNITY WATER SUPPLY

Chair: Bernie Hornby, NADC, Fox Creek

Panelists: Mike Znak, Transportation and Utilities
Jim Reynolds, Mayor of Fairview

Theme

The provision of reliable potable water supplies is essential for the social and economic wellbeing of northern communities. Concerns of northerners regarding community water supply relate to the protection of water quality and the perceived relationship between quality and health, security of supply, adequate distribution facilities and cost. Each community is faced with unique circumstances based on location, population size, cost and external impingements on the quantity and quality of water. Some communities have readily available resources needing little expense to develop. This is not true for all communities.

Regardless of source there are common concerns about assured water quality.

Key Concerns

- Assured Reliable Supply
- Operation Maintenance and Replacement of Systems
- Long-term Planning, Co-ordination and Implementation
- Special Circumstances of Small and Remote Communities
- Protection of Water Quality

Suggested Actions

ASSURED RELIABLE SUPPLY

1. Incremental funding is required for expansion and upgrading of water supply systems to provide assured reliable supplies – existing programs should be sustained and enhanced where feasible.

2. Remote and isolated communities should be given special assistance in locating and maintaining a reliable community water supply. New communities should not be built without a sufficient long-term water supply of acceptable quality.

3. The water licensing process should include provisions for technical evaluations, correlation of data and ongoing monitoring to ensure supply; the cumulative impact of industrial withdrawals of surface and groundwater must be identified.

OPERATION, MAINTENANCE AND REPLACEMENT OF SYSTEMS

4. Training and upgrading should be provided for operators of facilities especially in small and remote communities. Educational requirements should be looked at with respect to small communities and a local hiring policy.

5. A provincial and municipal program to assist in the sponsorship of one trained operator per community would aid in assuring quality control at water treatment facilities.

6. Consideration should be given to sharing operators among communities where applicable and to possible privatization of operation.

7. The province and municipalities should begin to monitor replacement needs of communities. A funding formula which meets the needs of all parties involved should be discussed and recognized.

8. Water conservation should be encouraged through user-pay, metering and public information.

9. Consideration should be given to provincial funding of operation and maintenance costs in circumstances of unique need.

LONG-TERM PLANNING, CO-ORDINATION AND IMPLEMENTATION

10. Water supply planning should be broadly based with provincial, municipal and local input. Provincial assistance may be necessary to support technical evaluations, data assembly and long-term community water supply planning.
11. Municipalities should consider the cost of sharing water supply planning, e.g., by sub-basins or by communities with similar problems.
12. Regional water systems and water co-operatives should be considered as possible methods of servicing communities.

SPECIAL CIRCUMSTANCES OF SMALL AND REMOTE COMMUNITIES

13. A task force approach should be adopted to solve the water supply problems of small communities, e.g., financial burden, water sources, operator training, quality monitoring; the task force should include the three levels of government, local people and cross-departmental representation.
14. Emphasis should be given to ongoing training and education to support local operation and maintenance of water supply systems.
15. Existing programs of special support (Northern Supplementary Fund, Northern Development Agreement) should be sustained.

PROTECTION OF WATER QUALITY

16. Government should give a higher priority to monitoring and enforcement of water quality standards.
17. The provincial government should give more assistance to municipalities for trouble-shooting and problem-solving with respect to water quality.
18. Techniques of monitoring and data management need to be improved to support an effective enforcement process.
19. Environmental impact and assessment procedures need to be strengthened with more public input incorporated in the approval process, particularly with respect to downstream water users.
20. Cumulative effects must be considered when assessing water quality impact of upstream effluents or waste disposal wells. Non-point pollutants should be considered in planning for and protecting water supplies and quality.

W-3 FARMLAND DRAINAGE AND EROSION

Chair: Eugene Dextrase, NADC, High Level

Panelists: Bruce Elson, W-E-R Engineering
Willie Janssen, Chairman ID #20

Theme

The unique susceptibility of northern Alberta soils to water erosion, particularly in the Peace River Basin, is responsible for increased flooding and erosion problems which are progressively altering the landscape causing hardships for farmers and local communities. Problems of drainage and erosion are closely interrelated. Efforts to reduce farmland flooding and increase arable land areas through drainage have led to increased soil erosion. The abundance of wetlands and problems with seasonal sheet flooding across much of northern Alberta have prompted substantial interest in drainage.

Drainage can result in the loss of wetlands, impacting on wildlife and water fowl. Improper drainage techniques can increase susceptibility to erosion and have negative effects on productivity as well as downstream water quality.

Key Concerns

- Land Use Planning, Control and Enforcement
- Education and Program Delivery
- Surface Water Retention
- Program Funding

Suggested Actions

LAND USE PLANNING, CONTROL AND ENFORCEMENT

1. Policies and criteria governing the release of Crown lands to agriculture should be reviewed. Water resource management must be emphasized in the criteria for land release. Farmers, local authorities and appropriate provincial agencies should all be involved in this review.
2. There is a need for improved standards and

controls on agricultural land clearing and land management in relation to drainage and erosion.

3. Transportation planning and implementation should be more extensively integrated with land clearing, drainage and erosion protection planning.
4. Remedial action for existing erosion problems on developed land should be drawn up and put into force immediately. Adequate funding is the major constraint.
5. Legal enforcement should include regulations or caveats on new patent and leasehold lands to ensure drainage is properly co-ordinated with other owners and agencies.
6. Incentives should be provided for regional group initiatives that allow co-ordinated water management systems that take all implications into account. There is a need for legal mechanisms to assist joint "multi-farm" projects.
7. Incentives should be provided so that farmers or landowners can return farmland with conservation concerns back to their original (natural) states. There should be adequate funds to enable the "Crown" to buy back land for conservation purposes.
8. Co-ordination should be emphasized among all involved agencies, including interdepartmental (within government) and interagency. Program implementation should be simplified with a "one-window" approach and local authorities must be involved in planning.

EDUCATION AND PROGRAM DELIVERY

9. Opportunities for, and implications of, proper land and water management related to farming practices on erodable soils and slopes have to be identified and properly conveyed to farmers. Existing education should be reviewed and expanded where appropriate.
10. Land owners, politicians, civil servants and agency personnel should be made aware of the need for regulations and enforcement which do not allow improper practices or release of unsuitable lands.
11. There is a need to simplify project application, review, approval and inspection of cost sharing projects, Soil Conservation Area Program (SCAP) and Farmland Development & Reclamation Program (FDRP). Present procedures are complex and require a lengthy approval time. Procedures should be reviewed and streamlined where possible.
12. Provincial engineering design standards need to be explained and co-ordinated with local authorities to ensure that capital and maintenance costs are acceptable. Design standards and technical alternatives should be reviewed with local authorities to ensure understanding of the benefit trade-offs.

SURFACE WATER RETENTION AND STORAGE

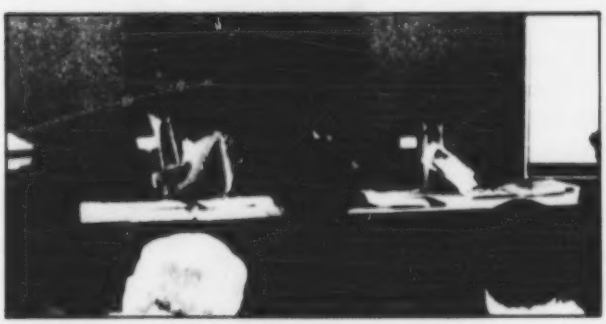
13. Conservation policies and programs must be established to protect natural wetlands, wildlife and fish habitats. Criteria and procedures should be developed to ensure that these features are taken into account when considering drainage programs.
14. Surface water retention, storage and consideration of wetland values should be included in drainage works programs. Man-made water storage should be looked at as a possible alternative.
15. Incentives are needed to encourage establishment of wind-breaks or plant buffers along water courses and to encourage natural wetlands and consolidation ponds as water storage areas.
16. Since the North has low annual precipitation and is almost semi-arid, the long-term impact of draining wetlands requires further research.

PROGRAM FUNDING

17. Strong political will is needed to implement this program on a scale sufficient to address identified problems.
18. Long-term provincial commitment to funding is required but only after adequate planning and consultation have occurred.
19. A well-funded provincial drainage and erosion control program is suggested. The program should have criteria and standards for implementation of projects and should consider environmental, social and economic factors.

W-4 SURFACE WATER QUALITY

Chair: Don Keith, NADC, Fort McMurray



Panelists: Hal Hamilton, Hydro-Qual Ltd.
Akio Masuda, Alberta Environment

Theme

Northerners' concerns included general contamination

and the pollution of surface waters from chemical and animal waste, industrial and municipal effluents; and septic tank systems. Water quality affects the entire population and all water-related activities. What balance is needed to protect the environment?

Key Concerns

- Public Education
- Non-Point Pollution (Agricultural Chemicals and Animal Wastes)
- Single-Point Pollution (Industrial and Municipal Effluents and Wastes)
- Stronger Regulations
- More Extensive Monitoring and Enforcement

Suggested Actions

PUBLIC EDUCATION

1. Emphasis should be placed on public awareness programs. The public should be made aware of existing regulations and their implications re effects on the environment and consequences of violation.
2. Educational programs at all school levels should be supported and encouraged. A pro-active approach to public education is needed.
3. An environmental hot line/information line should be in place and widely publicized. With each inquiry, there should also be appropriate follow-up.

NON-POINT SOURCES OF POLLUTANTS

4. More research is required into non-point sources of pollutants such as fertilizers, pesticides, and herbicides. The public – specifically users of possible pollutants – should be informed of the hazards of non-point pollutants and the measures available to reduce their use and effects.
5. Qualified assistance and financial support should be provided to farmers for proper use of agricultural chemicals and fertilizers. This assistance should be related to soil type and crop rotation.
6. Natural farming methods should be investigated in greater detail. Crop rotations, biological crop studies and the use of green manure should be included in the investigations. Financial incentives should be provided to assist in encouraging natural farming methods.
7. Feedlots should not be located near watercourses. Incentives should be provided to move existing feedlots located near streams and lakes.
8. A container refund program should be established to provide financial incentives for proper disposal of chemical containers.
9. Although Alberta Environment has recently indicated a policy of no methoxychlor, reinforcement and continuity of the policy is advocated.

SINGLE-POINT POLLUTION

10. Comprehensive environmental impact assessments (EIAs) are required before allowing developments. Define what is affected, to what degree and the long-term downstream effects. Water quality objectives should be established and achieved. Downstream water users should be involved in these assessments.
11. More research is required to identify methods to reduce or eliminate odor and color from pulp mill effluents, and fish tainting from oil sand effluents.
12. Financial incentives to both industry and municipalities should be offered for improved treatment of wastes.
13. There should be extensive research into waste treatment and disposal methods prior to approving industrial expansions, especially of pulp mills and heavy oil developments.
14. Monitoring data should be made available to the public in a comprehensive, readable format.
15. Individual septic systems should be more rigidly inspected to ensure proper installation and there should be more extensive monitoring to enforce proper operation. Design standards should be reviewed and upgraded. Planning authorities should recognize the need for operational septic systems and evaluate the proposals with high septic standards in mind. Public health units should be an integral part of the process.
16. Regional laboratory testing facilities should be available. The private sector should be encouraged to take on this function.

STRONGER POLICIES AND REGULATIONS

17. Provincial policy should consider zero discharge and no assimilative capacity.
18. Greater assistance should be provided for installation and operation of sanitary landfills. Landfills should not be near water courses and drainage patterns should be taken into consideration.
19. There must be greater political will for environmental protection. Both economic and environmental implications of development should be considered in the decision-making process.
20. Information-gathering should be ongoing for regulation updating. All standards should be based on sound, current scientific information.

21. Higher treatment and disposal standards should be developed with clear, concise and enforceable regulations. These regulations should be developed jointly with industry, government and the public with due consideration of industrial costs but with protection of the environment as priority.

22. Before developing lakes for recreation, governments and local authorities should do tests and studies to ensure that water quality is suitable.

MORE EXTENSIVE MONITORING AND ENFORCEMENT

23. More funds should be made available to hire and train local monitoring and inspection personnel.

24. Better sampling techniques should be developed and more extensive water quality monitoring programs carried out.

25. There should be an equitable application and enforcement of regulations among water user groups.

W-5 WATERSHED AND WETLANDS MANAGEMENT

Chair: Fred Gingerich, NADC, Athabasca

Panelists: Murray Hampshire, Ducks Unlimited
Don Young, Environmental Management Associates
Alf Birch, Alberta Agriculture

Theme

Land and water resource management cannot be separated. Water availability, flow and quality are affected by land use and land management practices. The implications for water of public land management policies and practices and the pressures and problems associated with wetlands and shorelands were central to the discussion of watershed and wetland management.

Key Concerns

- Integrated Land and Water Management/Planning
- Control of Surface Distribution on and Erosion of Public Lands
- Conservation, Maintenance and Enhancement of Wetland Habitat
- Access to and Ownership of Wetlands, Beds of Waterbodies and Shorelines
- Public Awareness and Education

Suggested Actions

INTEGRATED LAND AND WATER MANAGEMENT/ PLANNING

1. Lands with conservation problems should not be released for agricultural use.

2. Co-ordination of government policies is required to avoid conflicts, e.g., clearing and drainage versus water retention.

3. When land is released, natural watershed boundaries should be the criteria and not disjointed quarter-section parcels.

4. Prior to land release, there should be adequate study of implications to both land and water. Local public involvement must be included.

5. The existing Integrated Resource Planning Process requires reinforcement; greater detail is required as well as stronger political will for more public involvement.

6. Individual basin management planning should be extended across northern Alberta on an interdepartmental basis (e.g., similar to Beaver River Study).

7. Integrated basin management should apply to both public and private lands.

MANAGEMENT OF SURFACE DISTURBANCE AND EROSION ON ALL LANDS

8. Tax incentives should be examined as a means to encourage conversion of marginal lands to an appropriate use (e.g., reforestation, grazing).

9. The "roll back" technique for seismic lines, although expensive, should be considered as a requirement in specific areas.

10. The hydrogeological impact of clearing land needs to be further investigated.

11. Grazing leases which are potentially sensitive should have provision for examining reclamation options.

12. Existing surface disturbance controls and regulations are actively supported by northerners. Therefore, implementation and enforcement should be assured.

13. Emphasis should be given to the protection of public lands from surface disturbance and water quality degradation arising from forestry practices, motorized recreational vehicles, oil and gas facilities and seismic activities.

CONSERVATION, MAINTENANCE AND ENHANCEMENT OF WETLANDS

14. Compensation to landowners should be actively considered as a mechanism to conserve wetlands.
15. There is a need to evaluate wetlands, have these recognized in land and water planning, and implemented through political will.
16. Governments and responsible agencies should be pro-active in promoting and applying wetland conservation.
17. Mechanisms should be put in place to retain or enhance wildlife habitat, particularly regarding drainage and surface disturbance effects.
18. A "no net loss" policy should be established for wetlands because of fish and wildlife habitat and the relationship between surface and groundwater.

ACCESS AND OWNERSHIP OF WETLANDS, BEDS OF WATERBODIES AND SHORELANDS

19. The ownership of shorelands, particularly adjoining agricultural and recreational lands, requires clarification and public awareness. The rights of landowners, leaseholders and the public need to be clarified.
20. A program should be established to acquire public access to significant water-based recreation areas through designated corridors.
21. Crown shorelines should be guaranteed appropriate access; shoreline vegetation should be maintained in the public access areas.
22. There should be public education to promote respect of public and private shoreline rights.
23. Procedures for access to Crown wetlands could be altered to accommodate seasonal use.

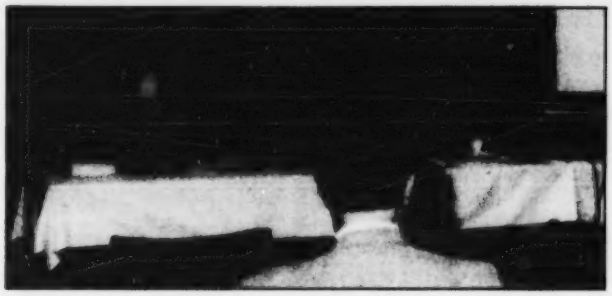
PUBLIC AWARENESS AND EDUCATION

24. Effective farm management practices incorporating soil and water conservation should be promoted more intensively.
25. Greater emphasis should be placed on raising awareness and knowledge about integrated land and water management.
26. Information on watershed management policies and practices should be broadly distributed; discussion of projects and plans should be encouraged.

W-6 FARM WATER SUPPLY

Chair: Reg Adam, PFRA

Panelists: Hank Larson, PFRA
Jack Newman, Fort Vermilion



Theme

Many farms in northern Alberta depend on scarce, low quality water supplies from dugouts or wells. The availability and quality of water for agriculture use are highly variable across northern Alberta. The physical and economic constraints of providing an adequate water supply, as well as the limited opportunities for improving these supplies are matters of concern. In general, rural water systems are not subject to the rigorous standards and controls required by urban communities.

Key Concerns

- Protection of Groundwater Aquifers and Water Wells
- Guidelines and Procedures for Obtaining Farm Water Supply Assistance
- Education and Technical Assistance in Locating Potable Water Supplies

Suggested Actions

PROTECTION OF GROUNDWATER AQUIFERS AND WATER WELLS

1. Greater emphasis must be placed on an improved groundwater data base. Problems related to water well losses associated with seismic and other drilling activities require more monitoring and closer scrutiny. Research into the reasons for well loss and its relationship to industrial activity is needed.
2. Review of standards, regulations and construction and monitoring related to deepwell disposal of contaminants should be conducted so that good quality acquifers will not be contaminated now or in future. Improved technology and research should be supported.
3. Establish public education programs to highlight the assistance and technical support available when wells are lost; the importance of water quality should be stressed in this program.

GUIDELINES AND PROCEDURES FOR OBTAINING FARM WATER SUPPLY ASSISTANCE

4. Equitable programs should be established for funding farm water supply and farm water treatment systems.

5. A public education program should be developed to outline all the existing procedures, requirements, and technical and financial assistance programs available to obtain reliable, good quality on-farm water supply.
6. Long-term agronomic, environmental and economic research on the feasibility of irrigation for northern Alberta is required.

EDUCATION AND ASSISTANCE IN LOCATING POTABLE WATER SUPPLIES

7. Retain and upgrade the Alberta Farm Water Grant Program.
8. Develop a better groundwater data base including both quantity and quality. The data base should contain information on aquifer feed systems, drainage areas and effects of pumpouts.
9. Provide more assistance in locating dugouts to ensure ample good quality water supply. Government agencies should also provide drilling and geotechnical information to ensure dugouts will hold water. Information on proper dugout operation and maintenance should be available to farmers.
10. Better access to quick water quality testing is needed. Turn-around time on water quality testing currently takes more than three weeks.

W-7 TOURISM RECREATION AND FISHERIES

Chair: Marcel Ducharme, NADC, Bonnyville

Panelists: Colin Jeffares, Travel Alberta
Dave Fernet, Environment Management Associates

Theme

Attractive recreational water resources with tourist generating capabilities are unevenly distributed across northern Alberta. To the east, there is an abundance of high quality lake and river resources offering a diversity of recreational experiences. Dozens of lakes and river tributaries have excellent fishing resources. Beautiful beaches and swimming sites can be found, particularly in the Lakeland region, and numerous areas provide high quality canoeing, boating and sailing.

High quality recreational water resources are most limited on the western side of northern Alberta where there is a lack of water-related tourist destinations. Although the Peace, Smoky and Hay Rivers offer good boating and canoeing opportunities, lake-based recreation is generally confined to relatively shallow, moderate quality resources primarily serving local needs. Lesser Slave Lake is a notable exception providing excellent beaches and sport fishing opportunities.

Key Concerns

- Integrated Resource Planning – Land and Water Related
- Water Quality
- Resource Enhancement
- Lake Level Management
- Communication among Government Departments and with the Public

Suggested Actions

INTEGRATED RESOURCE PLANNING – LAND AND WATER RELATED

1. Combined water management and land use planning into fully integrated basin planning for all northern basins. The co-ordination and co-operation of all government departments and the involvement of all communities affected is critical.
2. Ensure public input before changes are permitted in water management/resource plans.
3. Co-ordinate plans and regulations for both Crown and private lands.
4. Emphasize wilderness recreation; develop a classification system and inventory of lakes; conduct more water framework studies.
5. Lottery funds should be directed toward environmental research and development. The research could explore the relationship between economic development, such as tourism and recreation, and the environmental impact and effect of such development. This research would ensure the co-existence and maintenance of both economic development and the environment in a region.

WATER QUALITY

6. Encourage the use of land-based sewage disposal alternatives.
7. Consider a borrow-clean, return-clean policy within the constraints of existing technology.

8. Remove assimilative capacity of water resources as a consideration in water resource policies.
9. Improve enforcement of existing sewage discharge and cottage regulations (health inspector, rural bylaw enforcement officers).
10. Consider legislation to charge individuals guilty of non-compliance.
11. Permit the minister responsible for an Act to lay charges.

LAKE LEVEL MANAGEMENT FOR RECREATION

12. Government should take a more conservative approach to surface and groundwater disposition licenses until these two types of water interrelationships are better understood.
13. Greater emphasis and priority should be placed on the relationship between surface and groundwater.
14. There should be improvement of existing lake level management.

RESOURCE ENHANCEMENT

15. Increase research and funding to identify appropriate access to and development of new fishing and recreational sites in the North.
16. Undertake extensive and reliable fisheries inventories throughout the North.
17. Encourage small regional fish hatcheries and spawning habitat enhancement.
18. Improve lake level management and maintain water quality at existing levels.
19. In order to ensure management of fisheries, specialized fish habitat technicians and biologists should be available on-site.

COMMUNICATION AMONG GOVERNMENT DEPARTMENTS AND THE PUBLIC

20. There must be closer liaison among provincial departments concerned with recreation and tourism.
21. There must be improved liaison between provincial departments and local authorities.
22. The public needs clarification of the roles and responsibilities of provincial departments.
23. Public education emphasizing the importance of both commercial and sport fisheries should be conducted in conjunction with both parties through appropriate associations and agencies.
24. Develop procedures to minimize government "run-around" and provide the public with easier access to responsible officials. Departments should have more regional/local representation. A "one-stop" shopping concept, possibly with a toll-free number is one idea.

W-8 INDUSTRIAL WATER USE

Chair: Jim Peacock, Shell Canada

Panelists: Ron Hicks, Alberta Environment
Steve Howes, Procter & Gamble

Theme

Extraction and processing industries based on natural resources, particularly forest and petroleum resources, are fundamental elements of the northern economic base. These industries require reliable sources of water to operate and have, where possible, located on or near relatively abundant sources in the major rivers of northern Alberta (Peace and Athabasca systems).

Measured in terms of either withdrawal or consumption, water use by industry is greater than municipal, domestic and agricultural use in all northern basins. There is growing apprehension about the increasing demand that industry puts on both ground and surface water. There are concerns regarding the impact of those demands on availability for other users, and major environmental questions regarding the effects on water use and wastewater discharge.

Key Concerns

- Public Access to Information and Complaint Process
- Recycling
- Groundwater Research and Groundwater-Surface Water Interactions
- Water Availability and Allocation
- Planning Processes

Suggested Actions

PUBLIC ACCESS TO INFORMATION AND COMPLAINT PROCESS

1. Better public access and support in lodging and

identifying problems as needed. Some form of assistance to private citizens is suggested, possibly a toll-free telephone number. They key is follow-up on complaints by both industry and government.

2. There must be more public information on water uses, including industrial water supplies and health risk information.
3. A central clearing house for water-related information and point of contact for problem referrals is needed.
4. Greater inter- and intra-government co-operation and co-ordination are required to clarify and simplify government roles in regulating industrial water uses.
5. Environmental reports should be in language and format which are easily understood by the lay reader.

RECYCLING

6. Industry should be required to use the best recycling technology available, within reasonable costs. More information on recycling processes and technologies should be encouraged among industries, government and the public.
7. Financial measures such as a user-pay policy should be considered to increase water use efficiencies.
8. Specific guidelines and targets for water recycling should be developed and performance in achieving targets monitored.
9. The public should know who is responsible for regulating recycling requirements.

GROUNDWATER RESEARCH AND GROUNDWATER-SURFACE WATER INTERACTIONS

10. There should be greater emphasis on collection of baseline groundwater inventory data and research into groundwater-surface water interactions.
11. Inform and educate the general public on interaction of ground and surface water.
12. Where there are disposal wells better monitoring should exist and the information should be available to the public.

WATER AVAILABILITY AND ALLOCATION

13. Criteria re allotting water should be developed as part of the basin planning process. Consultation with all concerned parties should take place before allocation. Regional needs and differences should be recognized.
14. The availability and limitations of groundwater supply must be better defined through improvement of resource inventory data.
15. Instream flow and resource conservation requirements should be formally recognized in allocation procedures.
16. There is a need to publicly declare priorities for water use.

PLANNING PROCESS

17. There is a need for integrated land/water resource planning and co-ordinated policies and programs. Planning must be done with the full involvement of all relevant land and water resource jurisdictions, local authorities and the public.
18. Impact of water withdrawals and waste discharges that add up over time should be considered in water resource planning.
19. Integrated resource planning should be done on the basis of watershed boundaries.

W-9 NATIVE PEOPLE'S CONCERNS

Chair: Dave Anderson, FIGA

Panelists: Ron Wallace, Consultant to Native Groups
Simon Waquan, Fort Chipewyan
Lorraine Sinclair, Metis Association

Theme

Participants in this workshop chose to run it differently from the other workshops, so suggested actions varied from the draft Technical Report. Participants used a process of identifying issues and concerns, and suggesting actions. They did not work from the Technical Report but rather developed their own.

Key Concerns

- Native Self-determination and Involvement in Decision-making Processes

- Recognition of Native Rights and Holistic Approach Taken to Environmental Issues
- Native Safeguard of the Environment
- Educational Needs
- Preventive Programs
- Community Water Supply and Sewage Systems
- Identification of Environmental Impacts – EIA Process
- Reclamation and Restoration Projects
- Funding

Suggested Actions

1. Native people want greater input and involvement in decision-making. They wish to be able to control their own destiny. It is important that native rights and holistic philosophies be recognized and that native peoples be invited to participate as equal partners in environmental committees, projects, etc.
2. Native people would like an Aboriginal Environmental Task Force, to address environmental issues and concerns from a native perspective.
3. Both government and industry are encouraged to be sensitive to native lifestyles and philosophies. They should consult and inform native communities and groups prior to developments and at initial stages of projects rather than after impact has begun.
4. Funding should be made available to native groups which would allow them input to environmental issues and decision-making.
5. Native peoples would like to see and assist preventive programs. Alberta Environment is encouraged to emphasize preventive, educational programming to stress protecting and respecting the environment. Native groups would like to have active parts in such programming.
6. Recognizing that development will take place, native communities would like to be informed and consulted when developments will affect their communities, lifestyles and livelihoods. Special channels of communication should exist for emergencies brought on by accidental spills, etc.
7. To preserve the present and maintain the future environment, the use of herbicides and pesticides should be stopped.
8. Small remote communities and Metis settlements should be guaranteed water and sewage systems, to ensure the health of community members. Funding programs should be in place to ensure adequate water supplies and system delivery. Communities should be consulted extensively in the planning for such systems to ensure maximum community involvement and use.
9. Native people should be considered for employment on environmental projects.

W-10 WATER DIVERSION

Chair: Bob Cronkhite, Water Resources Commission

Panelists: Fred Durrant, P.Eng.
Tom Maccagno, Lac La Biche

Theme

Most of the province's stream flow passes through central and northern Alberta away from the primary population, industrial and agricultural centres. Historically, the tendency has been to solve water availability problems through supply management approaches. The long-established pattern of local diversions in southern Alberta raises fears that future water shortages in the south will be met by diversions from northern rivers. This possibility is an important issue for northern Albertans.

Key Concerns

- High Economic Costs
- Environmental Damage
- Social Considerations

Suggested Actions

1. Northern Albertans are not in favor of interbasin transfers of water from Alberta Basins. Therefore it is recommended that interbasin transfers not take place. The impacts associated with major interbasin transfers raise unique problems requiring special considerations and research. The impacts are not only social, economic and environmental in nature,

but could also be global. Until these issues have been fully addressed and analyzed, northern Albertans would like extreme caution exercised.

2. In light of opposition to interbasin transfers and the need for water in arid areas, research into new technologies and conservation methods should be developed. Increased efficiency and the discouraging of water system waste is advocated.

The luncheon address by Les Cooke, Assistant Deputy Minister of Fish & Wildlife Division of Alberta Forestry, Lands and Wildlife, a member of the Alberta Water Resources Commission, was moderated by Ted Sonntag, NADC, Hotchkiss.

Address, Water Resources Commission

Les Cooke outlined the composition and mandate of the Water Resources Commission. Mr. Cooke identified the major water concerns of the Commission. He said there is often a public perception that water is a southern issue but this is not the perception of the Commission. The Commission views water issues as provincial in scope. He assured delegates that in providing a provincial advisory body all issues are addressed and total provincial impacts examined.

The province has a problem with the timing of water. The South has a shortage at crucial times and the North has too much water at the wrong time.

Mr. Cooke noted four common elements of water issues in Alberta:

- Quantity and timing of water flows
- Complexity of water resource management
- Multiple demands placed on all water resources
- Interface of land and water.

He also recognized that site-specific solutions are not solutions. What are required are long-sighted, long-range solutions. He said: "There is a need for a provincial policy base. The highest priority of the Water Resources Commission is to see that there is a set of provincial policies in place that clearly establish the base for managing water resources." Mr. Cooke identified the basic approach being taken by the Water Resources Commission:

- Developing a provincial water policy base
- Ensuring availability of a good information base
- Advocating advance planning
- Stressing the importance of integration and co-ordination.

Mr. Cooke continued by singling out two water issues of concern that have definite northern implications – wetland management and integrated planning. He noted that in 1983 the Commission realized it had very little information, policy or planning related to wetlands, yet it was asked to make major decisions in this area. Thus it initiated an inventory of drainage potential and economic implications. The Commission funded the inventory and designed it as an interdepartmental project. He shared a few principal findings of the report:

- 20% of the province's agricultural area is affected by excess water.
- 75% of these lands are in northern Alberta.
- There are two million acres of non-permanent wetlands.
- Reducing the two million acres could reduce the waterfowl by 80%.

The Commission is conducting more detailed site studies and expanding the information base. Mr. Cooke places a priority on the need for a provincial wetlands management policy.

Mr. Cooke addressed integrated planning. He pointed out that Alberta Environment, in conjunction with other government departments, conducts integrated basin planning – water planning. And Alberta Forestry, Lands and Wildlife conducts extensive integrated resource plans – land planning. At what point do we integrate the planning? Both processes are open to public involvement. Mr. Cooke strongly urged delegates to take part in the process.

Lastly, Mr. Cooke indicated that the Water Resources Commission is looking forward to the results of the Conference and will review the proceedings carefully, welcoming the input of northerners.

After a long day at the workshops, delegates were entertained by the Grande Prairie Second Street Theatre group at the evening dinner and social.

DAY THREE

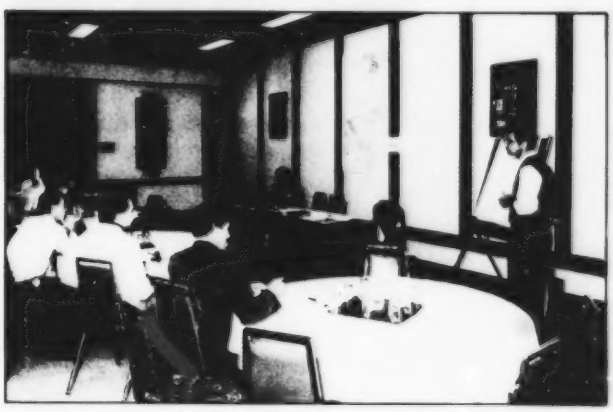
Day Three began with a plenary session and an overview of the day's proceedings from Bob Elliott.

Summary of Common Themes

Research consultant, Barry Hall, noted that in the focus groups and workshops several common themes permeated all the water issues. Therefore, the research team decided to separate them from the specific issues. He noted the workshops of the second day had focused on the specific issues and delegates would now proceed to a broader picture.

A.	Planning	• Comprehensive integrated basin plans required • Extensive public participation important
B.	Monitoring and Enforcement	• More field personnel for enforcement • Increased water resource monitoring – particularly surface water quality and groundwater impact monitoring • Enhanced laboratory and analytical capabilities
C.	Information and Education	• Co-ordinated thrust to inform and educate various sectors of the public • Increased accessibility of public to environmental information
D.	Program Delivery	• More funding for drainage and erosion control programs
E.	Funding	• Incentives for wetland conservation and greater effluent control • Sustained funding for community sewer and water facilities • Funding for development of public infrastructure for increased tourism and recreation opportunities
F.	Research	• Increased basic and applied research in groundwater distributions and dynamics • Increased research in ways to control waste discharges and to increase water use efficiency.

Delegates were then divided into small discussion groups and were each assigned two common themes to discuss.



The following suggested actions are from the report-back session supplemented from the notes of the group recorders, and therefore reflect the discussions of the delegates.

(A detailed accounting of the common themes is available in the Technical Report, Chapter Six.)

SMALL GROUP DISCUSSIONS

THEME A

Discuss how the public and government agencies can improve water management in Alberta.

Suggested Actions

- Integrated multiple resource planning must take place among all levels of government, the public and industry. Planning should be on a regional basis.
- Planning for resource use must consider all land and water use options.
- Education and communication are required at all levels of government, the public and industry throughout the planning process.
- Decision-making should be decentralized and experts made available at the local level.
- The public must be involved early in planning and provided with understandable and easily accessible information.
- Compensation money should be available.
- Government departments should work closer with regional planning commissions for integrated resource planning. Access to public information should be simplified.
- Integrated planning requires public input, in identifying and enhancing potential resource areas.

THEME B

Discuss improvements or changes that could be made in water resources monitoring and enforcement.

Suggested Actions

Land and water legislation and regulations should be evaluated from time to time to determine if they are appropriate for changing conditions.

- Co-ordinated federal, provincial and municipal government monitoring of resource use is required on an ongoing basis.
- All federal, provincial and municipal legislation and regulations must be reinforced with education and combined with appropriate enforcement.
- There must be an increased desire at all levels of government and enforcement agencies, to enforce existing rules.
- Water quality and quantity legislation must provide for alternative methods of enforcement in order to place the onus of compliance on the individual.
- Legislation is necessary to protect in-stream water use (i.e., protect levels).
- Monitoring information is needed on both sides and this must be accessible to the public.
- The public must be involved in monitoring through:
  1. Simply explained results
  2. Improved environmental education
  3. Reporting of infractions to authorities.
- The legal system should be educated in environmental matters so that penalties will be scaled to impact and loopholes will be plugged.
- Political will to prosecute violators is necessary. There is a clear guideline within government departments regarding enforcement and authority.
- "Who's responsible for what?" Greater awareness of existing rules, guidelines, and contacts for the public are needed, along with violator report systems.
- More lake, river and stream monitoring is needed to determine quality and quantity levels. Better lab access to results is also needed.

THEME C

Discuss ways in which the public can acquire greater information and education on water-related issues.

Suggested Actions

- Government should consult and work with the public.
- Government should work to provide specific answers to specific questions from the public but have answers to broad issues as well.
- Government should strive to have a single window to itself through which questions could be properly directed.
- Improve public awareness of water issues and information through television commercials and a general media campaign.
- Local workshops should be used to identify regional concerns. Workshops should be designed to handle local issues and input by the public.
- Encourage cross-cultural environmental awareness (e.g., school systems, use common language, films,

television, video-tapes).

- Interagency/public interface (government, industry, local government) should take place on a project and issue basis at regular meetings.
- One way to get information to the public is a 1-800 number. Follow-up on requests is important.
- Each program area should include an extension component directed at a targeted audience through a marketing strategy.
- Create a single, central readily accessible government information service to provide service on topical issues.
- All analytical services should have a simplified interpretive component. Documentation should be in layman's terms.
- Establish a mandatory environmental education component in the schools.
- Communication among local governments, industry, the public and provincial government is the key. A pro-active approach is needed.
- Hot-line service – existing services should be reassessed and improved. The public should be made aware of the service.
- A one-window approach should be looked at.

THEME D

Discuss the changes that could be made to water-related programs or program delivery.

Suggested Actions

- Long term co-ordinated planning is needed. The overall plan seems to be programs that have conflicting goals.
- Program delivery needs to be equitable across the province and should be based on socio-economic needs. Residents in small northern communities have a right to good drinking water and sewer systems. The North should receive as much funding for erosion and drainage problems as the south receives for irrigation.
- Interagency meetings would be helpful to ensure people are working together and not at cross purposes and tailoring information to those receiving it.
- One-window approach as to what should be done through a contact person in municipal offices, an information/ liaison desk.
- Program delivery should be accomplished through a facilitator who would interact between citizens and government. The facilitator would deal with citizens, communities and government.
- Conflicts between programs should be co-ordinated to resolve conflicting interests such as wetlands vs. agricultural drainage.
- Provide a directory of water programs and contacts to each municipal office.
- Long-term co-ordinated planning to avoid conflicting goals is necessary. There should be a one-window approach through a contact person at the municipal level.
- Make program delivery meet the needs of the client and not the accounting system.
- Government senior management functions should be restricted to program policy formulation, direction and monitoring, whereas program delivery responsibility should be as close as possible to the targeted client.
- Existing programs should be evaluated in terms of objectives and benefits to identify funds for allocation; in addition, new projects must be considered with reasonable and relative cost and social benefit in mind.
- Government should move toward single contacts for project approvals. As it is now, the public has to talk to too many people.
- The basic principle: The right to have good quality water and proper sewage/disposal facilities (standard of living) should be recognized.
- Public funding assistance for individual and community education and services, and awareness of existing programs.
- Let field managers and local authorities manage.
- Make programs more equitable and flexible to meet needs of target groups/settlement type, e.g., everyone should have the right to proper water and sewage facilities, e.g., balance drainage and erosion dollars in North with that of the south.
- Provide a directory of water programs and contacts to each municipal office.

THEME E

Funding

Suggested Actions

- Determine price tag of programs discussed at this Conference, e.g., cost of projects.
- Assess what funding is presently available which could be realized in the future.
- Available funding to be allocated on the basis of economic viability of the projects based on mitigation of environmental efforts. Priorize funds as:

1) Conservation (prevention) #1 priority, concept of user-pay to apply.
2) Corrective action #2 priority, depending on addressing the critical situations first.

THEME F

Discuss what you believe should be emphasized in the area of water-related research.

Suggested Actions

- Identify existing research and results of ongoing projects so that needs can be identified. This would involve new technologies, and Alberta, Canadian and International studies.
- Identify effects of technology (e.g., loss of wetlands, habitat) and analyze existing policies, both provincial and federal.
- Identify necessary future research after evaluating existing research.
- Should all research be assimilated by one group (e.g., one-window approach)?
- Involve the end-user in research projects (e.g., identify future research needs, disseminate the information, etc.).
- Adequate budgets must be set annually and funds dedicated to research on an ongoing basis by application of user pay principle.
- Annual accountable programs with publicized results.
- There should be adequate prior and ongoing research before industrial developments, e.g., kraft and pulp and paper mills, heavy oil plants etc., are allowed to proceed.
- Land clearing impacts should be identified prior to release of land.
- Catalogue, co-ordinate and simplify all existing information available to determine gaps in information.
- There is an urgent need for research on the fundamental interrelationships of water flow regimes.
- The allocation or reallocation of funds to carry out the identified research requirements is necessary.

CLOSING REMARKS

Following the presentation of the suggested actions by the small group recorders, Eugene Dextrase, NADC, High Level, called on Michael Keating to deliver closing remarks.

Mr. Keating began by thanking delegates for their western hospitality and their commitment. Mr. Keating told delegates that the Conference projected a sense of commonality with the rest of Canada. Many issues raised by delegates and participants are national issues. "You are not alone," stated Mr. Keating, "but time is running out....There are other people who have gone through these problems. Look around in your communities...look around at other parts of the continent."

As an example, he cited the many references to zero discharge. Ontario has explored the concept and has concluded that zero discharge of persistent toxic contaminants is its target. People must be realistic in setting goals and targets.

Mr. Keating observed a great deal of frustration with the current system and the lack of co-ordination but, he stressed: "You have sent your message clearly to the government representatives here."

He also commented on delegates' frustration in dealing with information – the lack of access, the jargon, the location of information, etc., and urged them to send a message to the people who write the documents. Send the reports back, remove some of the jargon.

Education is also crucial in the information question. As Mr. Keating pointed out: "We are in this for the long term....We must educate our children. Our children will inherit what we leave them!"

He asked: "What do people want? Sustainable development? People need and want development for it's their living. How do we move toward it and how do we achieve development that will not destroy the environment? The answer is complex and it rests with you. You must become informed. Get the right information," challenged Mr. Keating.

Information is available and should be accessed. An information clearing house was suggested by Mr. Keating. He noted that much information is free and that both industry and government produce great quantities but it takes time and effort to look at the material. An information clearing house to collect and turn information into an advisory policy group would be beneficial. He noted such groups already in existence in Alberta, the Community Advisory Committee in the Grand Centre/Cold Lake region and the Fort McKay Interface Committee.

Mr. Keating concluded with the following comments:

"You and I are not visitors to this planet. We are part of its life, and if we're part of its life we're part of its life support system, and if that's true so are the other parts of the system. If we destroy too much then we destroy part of ourselves. Environmental protection is not something we do as a favor to wildlife or other species...it's something we do for the long term interests of our society.

"I think you have the chances to be leaders in your communities, this province and this country. I'd like to

come back to write a success story.

"Good luck, work hard and don't fail."

NADC Chairman, Bob Elliott, closed the Conference by thanking all delegates for excellent co-operation and dedication to the work over the three days. He charged them to return to their communities and take up the challenges presented in the Conference.

Dr. Elliott noted that the suggestions of delegates would be extensively reviewed by the NADC and they would go into the final Technical Report. He said that a set of Northern Alberta Development Council recommendations would be prepared based on the deliberations for consideration by the Alberta government. He also noted that a Conference report with the recommendations would be produced and distributed to all delegates and interested parties.

NADC RECOMMENDATIONS

Following the Conference, the Northern Alberta Development Council re-examined the Technical Report and reviewed in detail all the suggested actions from the workshop and small group discussions. The following Northern Alberta Development Council recommendations are put forward for consideration by government departments and agencies:

Co-ordination

1. The jurisdictional mandates over water resources are so extensively distributed throughout government that the public is confused and perceives a lack of co-ordination. Thus the following measures are recommended:

   a) that the co-ordination role of the Water Resources Commission be enhanced and that the public be made aware of its co-ordination functions.

   b) that Alberta Environment in its reorganizational efforts recognize the importance of co-ordination and establish appropriate vehicles to facilitate it.

   c) that a directory be prepared for the public which would identify the role of all government departments involved in water-related issues. The directory should list a contact person and a 1-800 number.

   d) that it be reinforced that municipal and public input be sought at very early stages of project planning, since local input often sheds important light on an issue.

Integration

2. Integration of land and water planning was a key issue repeatedly identified. Thus the following measures are recommended:

   a) that a committee be established which reviews Integrated Resource Plans with Water Basin Plans to ensure compatibility of each. Members of the public and local authorities should be on the committee. The Water Resources Commission may be an excellent vehicle to facilitate this function.

   b) that Alberta Environment and regional planning commissions consult regularly regarding land use and water management projects.

   c) that consideration be given to water management issues and impacts when new land is opened. Greater co-ordination is needed between public lands and water resource administrators to ensure that impacts on water resources are minimized.

Public Information and Education

3. Repeatedly, in all topic areas, the issues of public information and education were identified. The following are recommended:

   a) that Alberta Environment continue to publish reports and ensure the public be made fully aware of their availability. Establishment of an environmental clearing house where the public could easily access information may be useful.

   b) that consideration be given to writing reports in "layman's terms" or at least producing an executive summary which simplifies and demystifies the often difficult scientific reporting.

   c) that Alberta Environment, in conjunction with other related departments, develop a major public awareness campaign that would highlight the effects of pollutants, waste disposal, environmental preservation, etc. The concept should be pro-active and use several mediums, i.e., television commercials, videos, newsletters, etc.

   d) that the environmental 1-800 hot line be widely advertised and listed in telephone directories so that access is readily available to all Albertans. It should be listed directly under the RITE number.

4. Education is seen as the key to the future. Therefore, the NADC recommends that Alberta Environment continue to work with Alberta Education to develop educational programs to be implemented in Alberta schools. A heightened awareness campaign for youth may be part of this effort.

Native Concerns

5. As environmental issues are of crucial concern to the way of life for native people in northern Alberta, it is recommended that native communities be heavily involved in assessing environmental impacts which will affect their communities and environs. Native people should be an integral part of policy and project development especially when upstream industrial development may have impacts.

Groundwater Management

6. Groundwater was identified as an area with many concerns. In light of delegates' views, the NADC recommends:

   a) that active research into groundwater supplies

and the interface between groundwater and surface water be continued and strengthened.

b) that a groundwater policy be developed in conjunction with industry, municipal leaders, government, and residents of the North to protect quantity and quality of groundwater supplies. A vital component of the policy should be a strong monitoring and enforcement program. The policy should be in place within the year.

c) that a clear groundwater policy which deals with future withdrawals for the Cold Lake-Beaver River Basin be developed within the next six months.

Industrial Usage

7. In order to encourage sustainable development, the industrial sector must be aware of its limits. Therefore the NADC recommends:

   a) that regional round tables or task forces be established (possibly on the basis of water basins) to discuss industrial policy for the water basins. Membership in these task forces should include industrial, municipal, governmental, agricultural, recreational, native, and general public representation.

   b) that greater co-operation be developed between industry and communities, and that Alberta Environment strive to ensure that industry and communities are dialoguing over the issues related to environmental matters.

   c) that the practice of deepwell injection and its implications be carefully monitored and that when deepwell injection is to be used in a new area, appropriate research into its impact be conducted.

   d) that the continued use of potable groundwater and non-flowing surface water for industrial purposes be seriously restrained. Community and agricultural use must be a priority.

   e) that water quality monitoring continue and that strong enforcement of the regulations result when a transgression occurs. Water quality should be paramount in the management of northern waters.

Surface Water Quality

8. The NADC recommends that a major study on non-point pollutants (i.e., fertilizers, pesticides, run-off, etc.) and their impacts on northern rivers and water supplies be conducted by Alberta Environment in conjunction with appropriate departments. A steering committee composed of government, municipal, agricultural, industrial, recreational and general public representatives should be an integral part of the study.

9. To ensure water-testing facilities are accessible to northern residents, the NADC would encourage the location of laboratory facilities in regional centres throughout the North. The feasibility of operating such centres by the private sector should be explored.

Wetlands

10. Recognizing the sensitivity and uniqueness of wetlands to the environmental regime, it is recommended that the Water Resources Commission move ahead and complete a provincial policy on wetlands within the next two years. Immediate release of its wetland inventory should also be considered.

Research

11. It is recommended that the concept of zero-discharge versus assimilative discharge versus zero-discharge of persistent toxics, should be investigated and a committee of representatives of all sectors – industry, government, local government, native peoples and the general public – be established to determine a provincial policy. This policy should be in place within the next three years.

12. That research into decreasing pollutants from pulp mills, oil sands plants and any other applicable heavy industry be conducted in order to maintain the quality and quantity of surface water supplies.

13. The 10 specific topics of this Conference all indicated a need for further research and investigation. The NADC recommends that Alberta Environment continue with an active data collection and research program and that water basin and sub-basin planning be stepped up in order to complete the northern basin studies within the next three years.

14. As part of all research efforts, local input and involvement should be mandatory. Local councils should be consulted prior to the commencement of projects and local input sought through an appropriate public involvement technique. Alberta Environment should have a unit in place which specializes in public involvement and a pro-active approach.

Funding

15. The timing and availability of government funds for local drainage and community water and sewer projects is crucial in northern areas. It is recommended that a consultative program be

worked out with the communities, and that funds be released based upon an agreed to schedule.

16. Supplementary funding for water and sewer systems to meet special needs in remote and isolated communities should be continued along with the development of training programs for service personnel.

17. Funding programs for on-farm water supplies should be continued through the co-operation of PFRA, Alberta Agriculture and Alberta Environment.

18. The NADC recommends that Alberta Environment substantially increase its funding for drainage and erosion programs in northern Alberta.

Jurisdictional Agreements

19. The Northern Alberta Development Council urges Alberta Environment to enter into necessary jurisdictional agreements with British Columbia and the Northwest Territories governments within three years.

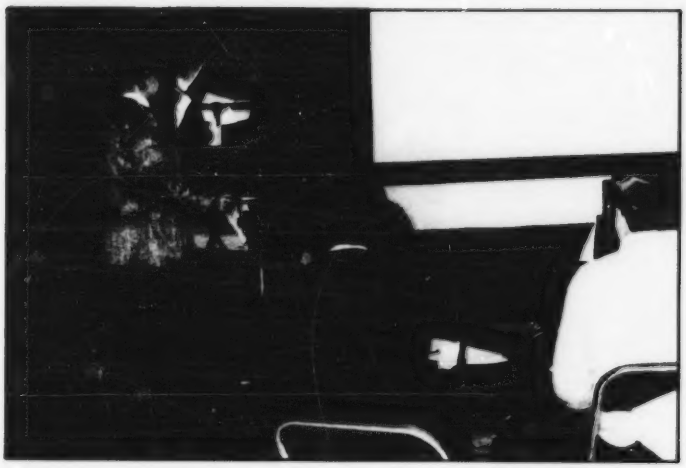
Water Diversion

20. Northerners have indicated a strong opposition to water diversion and the NADC recommends that major water diversion projects involving inter-basin transfers not take place.

CONFERENCE HIGHLIGHTS

Here we are!

Harried Conference organizer gives last minute directions.



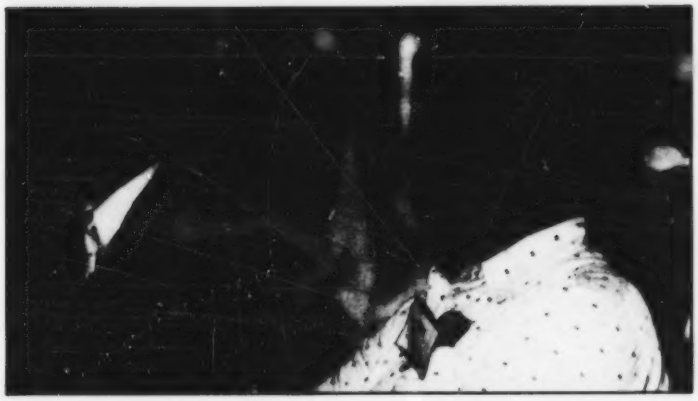
Let's talk about that.

Full attention for the speaker.

Got to get it all down just right!

Let's share a laugh.

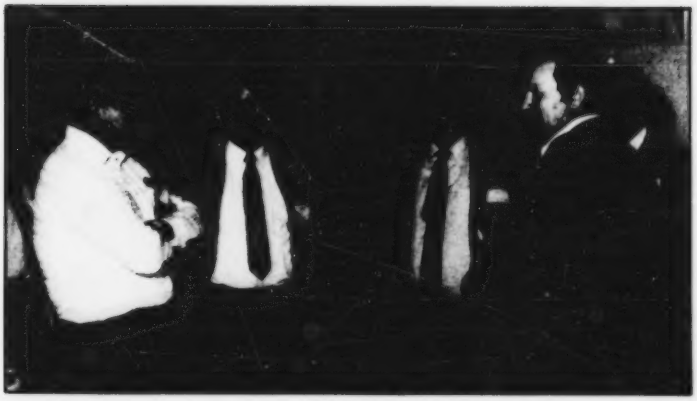
Do we agree or don't we?



It was a BIG consulting job.

Hands up everyone!

Are you enjoying the Conference?



The meal was good, now let's get back to work.

Smile! You're on Candid Camera.

Keynote speaker displays his gift from Council.

Delegates down to the nitty-gritty.

The end of a successful conference.

CONFERENCE FILMS

List of films available for viewing at the Water in Northern Alberta Conference.

"WETLANDS"

A statement on the value of wetlands (Ducks Unlimited, 1987).

"A LINK IN THE CHAIN"

Prairie farm water management from the 1930s drought to today's concerns (Prairie Farm Rehabilitation Administration, 1987).

"RIVER – PLANET EARTH"

An overview of how water sustains life and the importance of management (National Film Board, 1982).

"DEATH OF A DELTA"

The river and delta impacts caused by the construction of W.A.C. Bennett Dam (Film Frontiers Ltd., 1970).

"SPLASH"

An animated, humorous look at the demands made on water (National Film Board, 1982).

"RIVERS OF THE ROCKIES"

An Alberta-made film on river origins in the Rockies (Albert Karvonen, 1981).

CONFERENCE DISPLAYS

List of organizations who provided displays at the Water in Northern Alberta Conference.

SOUTH PEACE REGIONAL PLANNING COMMISSION, GRANDE PRAIRIE

ALBERTA ENVIRONMENT, EDMONTON AND PEACE RIVER

ALBERTA AGRICULTURE, EDMONTON

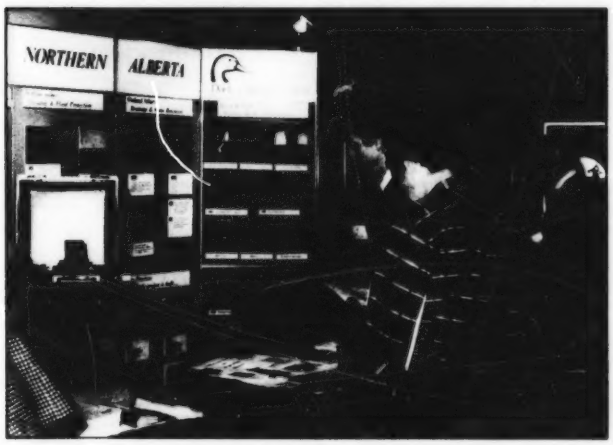
FORESTRY, LANDS & WILDLIFE, PEACE RIVER

DUCKS UNLIMITED, GRANDE PRAIRIE

PRAIRIE FARM REHABILITATION ADMINISTRATION, HANNA

ACCESS NETWORK, EDMONTON

MACKENZIE REGIONAL PLANNING COMMISSION, BERWYN



DELEGATES

ADAM, Reg – PFRA, Edmonton
ADAMS, Tom – Horse Lake Band, Hythe
ANDERSON, Dave – Federal & Intergovernmental Affairs, Edmonton
ANDERSON, Helena – Town of Grimshaw
APPLEBY, Don – Community Advisory Committee, Medley
ARCHIBALD, Gerald – Northern Development Branch, Peace River
ARNOLD, Lawrence – Village of Berwyn
AUGER, Barbara – Slave Lake
BALDWIN, Tom – Mackenzie Regional Planning Comm., Berwyn
BARLOTT, Paul – Alberta Agriculture, Edmonton
BARTLEY, David – South Peace Regional Planning Comm., Grande Prairie
BEAVER, Mike – NADC, Desmarais
BEGGS, Rosemary – Regional Economic Development Board, Falher
BELTRANO, Linda – Northern Development Branch, Peace River
BENNETT, Mary – NADC, Elk Point
BERGSTROM, Glenn – Forestry, Lands & Wildlife, Edmonton
BERKAN, Ralph – Alberta Agriculture, Vermilion
BERRY, Dene – Alberta Environment, Peace River
BILAWCHUK, Allen – Dome Petroleum Ltd., Grande Prairie
BIRCH, Dr. Alf – Alberta Agriculture, Edmonton
BLOWERS, Ted – ID #16, Little Smoky
BOUCHARD, Gilles – ID #17, St. Isidore
BOYER, Ray – County of Grande Prairie
BRIGGS, Bob – Alberta Environment, Edmonton
BRUNO, Alex – Fort Chipewyan Band
BRUSHETT, Ed – Energy Resources Conservation Board, Calgary
BULMER, Starr – MD Peace River, Berwyn
BUNN, Kelly – ID #17 (W), Peace River
CABLE, Dave – Alberta Environment, Edmonton
CHRISTIE, Morley – Forestry, Lands & Wildlife, St. Paul
CLEGG, Glenn – MLA, Dunvegan
COOKE, Les – Forestry, Public Lands & Wildlife, Edmonton
CREASEY, Roger – Energy Resources Conservation Board, Calgary
CRONKHITE, Robert – Alberta Water Resources Commission, Edmonton
CURR, Chuck – Alberta Municipal Affairs, Peace River
DENSMORE, Terry – Cold Lake
DEXTRASE, Eugene – NADC, High Level
DIEPEVEEN, Bill – Alberta Environment, Edmonton
DOLL, Walter – Municipal District of Fairview, Fairview
DROBOT, John – NADC, MLA, St. Paul
DUCHARME, Marcel – NADC, Bonnyville
DUCKETT, Betty – Grand Centre
DURRANT, Fred – Sidney
EDWARDS, Gordon – Ducks Unlimited, Edmonton
ELCHUK, Tom – NDP Office, Edmonton
ELLIOTT, Dr. Bob – Chairman, NADC, MLA Grande Prairie
ELSON, Bruce – W-E-R Engineering Ltd., Calgary
EPP, Jim – Fly Fishers Assoc., Grande Prairie
ERASMUS, Peter – McRae
EVANS, Ralph – Energy Resources Conservation Board, Calgary
FAHNER, Lewis – Alberta Environment, Edmonton
FAILLE, Rene – Town of Swan Hills
FERNET, Dave – Environmental Mgmt. Associates, Calgary
FINNERTY, Murray – Northern Development Branch, Peace River
FRANK, Gordon – ID #23, High Level
GAUTHIER, Roger – High Prairie
GILLIAT, Neil – Heavy Oil Advisory Comm., Slave Lake
GILLMORE, Ed – BP Resources Ltd., Bonnyville
GINGERICH, Fred – NADC, Athabasca
GRAVES, Lynn – Mobile Oil Canada Ltd., Calgary
GRAY, Howard – Forestry, Lands & Wildlife, Slave Lake
HAGAN, Stewart – Alberta Environment, Peace River
HALL, Barry – DPA Group Inc., Ottawa
HAMILTON, Hal – Hydro-Qual Consultants, Cochrane
HAMPSHIRE, Murray – Ducks Unlimited, Grande Prairie
HANSON, Margaret – Town of Swan Hills
HARPE, Richard – County of Grande Prairie
HECK, Peter – Manning
HERMANUTZ, Lawrence – Alberta Environment, Edmonton
HICKS, Ron – Alberta Environment, Edmonton
HORNBY, Bernie – NADC, Fox Creek
HOWES, Steve – Procter & Gamble, Grande Prairie
IMRIE, Len – Town of Sexsmith
JAFFRAY, Don – PFRA, Peace River
JANSSEN, William – ID #20, Woking
JEFFARES, COLIN – Alberta Tourism, Edmonton
JENSEN, Nels – Cold Lake
JOHNSTON, Jorden – Forestry, Lands & Wildlife, High Level
KEATING, Michael – Globe & Mail, Toronto
KEITH, Don – NADC, Fort McMurray
KELLS, James – Alberta Environment, Grande Prairie
KEMPER, Lynne – Alberta Water Resources Commission, Edmonton

KERR, Allan – Alberta Environment, Edmonton
KINCAID, James – Alberta Municipal Affairs, Spirit River
KING, Paul – Alberta Forest Service, Peace River
KNAPP, John – Alberta Agriculture, Fairview
KOLODYCHUK, Brent – REDC, High Prairie
KOLOMYVEC, Stan – Indian Affairs, Edmonton
KOWALSKI, *Hon. Ken – Alberta Environment, Edmonton*
KOZAK, Carol – Northern Development Branch, Peace River
KREKE, Lynn – Northern Development Branch, Peace River
L'HEUREUX, Guy – ID #17(C), High Prairie
LACK, Jerry – Alberta Environment, Edmonton
LALONDE, Kim – Alberta Environment, Edmonton
LAM, Sidney – Indian Affairs, Edmonton
LAMOUREUX, Laurent – Town of McLennan
LAMOUREUX, Steve – Transportation & Utilities, Edson
LARSON, Hank – PFRA, Hanna
LEWIS, Gordon – Environment Canada, Regina
LILAND, Don – Sexsmith Chamber of Commerce
LISKE, Peter – Esso Resources Canada Ltd., Calgary
LOCH, Kelly – Alberta Forest Service, Grande Prairie
LOGAN, Dwight – City of Grande Prairie
LORNIE, Robert – South Peace Regional Planning Comm., Grande Prairie
LOUNDS, Margaret – Alberta Water Resources Commission, Calgary
LUMBIS, Ken – Ducks Unlimited Canada, Grande Prairie
MACCAGNO, Tom – Lac La Biche
MACKENZIE, John – J.N. MacKenzie Engineering Ltd., Calgary
MACKINNON, Stewart – BP Resources Canada Ltd., Bonnyville
MACLOCK, Bruce – Alberta Environment, Edmonton
MACMILLAN, Bill – Alberta Agriculture, Fairview
MACNICHOL, Vance – Alberta Environment, Edmonton
MADDOX, Ken – Keneema Engineering Ltd., Peace River
MANCHUR, Jerome – Forestry, Lands & Wildlife, Peace River
MARCEL, John – Fort Chipewyan Band
MARCIAK, Leon – Alberta Agriculture, Edmonton
MASUDA, Akio – Alberta Environment, Edmonton
McARTHUR, Dave – Regional Economic Development Council, Lac La Biche
McCASKILL, Rob – Alberta Public Affairs, Edmonton
McCLURE, Scott - Alberta Environment, Edmonton
McELGUNN, Dr. James – Agriculture Canada Research Station, Beaverlodge
McGILLIS, Ian – Alberta Transportation, Peace River
McGREGOR, Tom – ID #18(S), Bonnyville
McKELVIE, Theresa – ID #22, Peace River
McPHAIL, Al – W-E-R Engineering, Calgary
MEAD, Doug – Shell Canada Ltd., Calgary
MEARDI, Larry – Town of McLennan
MELNYCHUK, Peter – Alberta Environment, Edmonton
MILLIGAN, Geoff – Northern Development Branch, Peace River
MILLS, Peter – Agriculture Canada, Beaverlodge
MILLSON, Ron – Forestry, Lands & Wildlife, Peace River
MINOOSE, Sam – Cold Lake Band
MINTY, Alan – Alberta Environment, Grande Prairie
MOSKALYK, Henry – Mackenzie Regional Planning Comm., Berwyn
MULHOLLAND, Jim – PFRA, Peace River
NAGEL, Hartmann – Unifarm, Woking
NEEDHAM, Colin – Northern Development Branch, Peace River
NESSMAN, Jerry – Alberta Environment, Peace River
NEUFELD, William – ID #23, La Crete
NEW, Lloyd – Slave Lake
NEWMAN, Jack – Fort Vermilion
NEWSHAM, Helen – Forestry, Lands & Wildlife, Edmonton
O'NEIL, Kevin – Alberta Environment, Edmonton
PATRY, Charles – County of Athabasca
PEACOCK, Jim – Shell Canada Ltd., Peace River
PENNO, Emil – ID #22, Grimshaw
PERRA, Romeo – Smoky River REDC, McLennan
PETERS, Wilbur – Town of Swan Hills
PETERSON, Garry – Town of High Level
PIQUETTE, Doug – Blue Print for the Future, Lac La Biche
PIQUETTE, Paul – AVC Lac La Biche, Plamondon
PONTO, Doreen – Northern Development Branch, Peace River
PROCTER, Michael – Town of Peace River
RADKE, Douglas – Alberta Agriculture, Edmonton
RASPBERRY, Gerald – ID #21, Worsley
RAYMENT, Ed – ID #18(S), Hylo
REID, Arlene – Northern Development Branch, Peace River
REYNOLDS, Jim – Town of Fairview
RICE, Vin – Kinuso
RIDDELL, Jerry – Public Lands, Edmonton
ROBBINS, Bob – Petro Canada Resources, Grande Prairie
ROBINSON, Marge – St. Brides
ROLL, Dennis – Alberta Agriculture, Airdrie
SCANIE, Francis – Cold Lake First Nations
SCHNIDER, Jacquie – South Peace Health Unit, Grande Prairie
SCHULZ, Doug – Esso Resources Canada Ltd., Calgary
SEATON, Hugh – Northern Development Branch, Peace River
SHAW, John – Community & Occupational Health, Edmonton
SHERIDAN, Bill – Beaverlodge
SHEWCHUK, Paul – Alberta Environment, Edmonton

SIMMS, Dr. Percy – Alberta Environment, Edmonton
SIMPSON, John – South Peace Regional Planning Comm., Grande Prairie
SINCLAIR, Lorraine – Environmental Research Centre, Edmonton
SINCLAIR, Sam – Metis Association, Edmonton
SINCLAIR, Wally – Metis Association, Bonnyville
SKINKLE, Larry – Alberta Forest Service, Slave Lake
SKIPPINGS, Nick – Fort McMurray Health Board, Fort McMurray
SMITH, Ken – Alberta Environment, Edmonton
SNIDER, Don – Alberta Transportation, Edmonton
SOMMERS, Jack – Peace River Health Unit, Peace River
SONNTAG, Ted – NADC, Hotchkiss
SPELLER, Wayne – Petro Canada Resources, Calgary
SPILCHEN, Elmer – South Peace Health Unit, Grande Prairie
STERKENBURG, Otto – Town of Beaverlodge
STROME, Allan – Alberta Environment, Edmonton
SURRENDI, Dennis – Fish & Wildlife, Edmonton
SUTHERLAND-NIKOTA, Corinne – Northern Development Branch, Peace River
TAYLOR, Alice – Desmarais
TEILLET, Kathy – Northern Development Branch, Edmonton
THOM, Gerald – Metis Association, Lac La Biche
THOMAS, Gerald – Mackenzie Regional Planning Comm., Berwyn
THOMPSON, Gerry – Forestry, Lands & Wildlife, Peace River
THORDARSON, Cynthia – Northern Development Branch, Peace River
TISSINGTON, Jim – County of Grande Prairie
TOKARSKY, Orest – Alberta Environment, Edmonton
TOMSHAK, Albert – County of Grande Prairie
TURNER, Cliff – South Peace Health Unit, Grande Prairie
VANDER GIESSEN, Nico – Alberta Environment, Grande Prairie
VANDERWEL, Dow – Alberta Agriculture, Edmonton
VANT ERVE, Albert – Beaverlodge
VARRICCHIO, Greg – Northern Development Branch, Peace River
WALKER, Eileen – Edmonton
WALKER, Phil – Alberta Water Resources Commission, Edmonton
WALLACE, Dr. Ron – Dominion Ecological Consulting Ltd., Calgary
WALTY, David – Fish and Wildlife, Peace River
WAQUAN, Simon J. – ID #18(N), Fort Chipewyan
WARD, Nevil – Hull
WAYLETT, Bill – Ducks Unlimited Canada, Camrose
WEBSTER, Gary – Dome Petroleum, Calgary
WEISS, Hon. Norm – MLA, Fort McMurray
WHITAKER, Wayne – Drought Assistance Committee, Manning
WIENS, Greg – City of Grande Prairie
WILCOX, Herb – Beaverlodge
WILLIAMS, Larry – Alberta Environment, Grande Prairie
WILLIAMSON, Grant – Alberta Forest Service, Grande Prairie
WILLSEY, Dale – Forestry, Lands & Wildlife, Grande Prairie
YOUNG, Don – Environmental Mgmt. Associates, Calgary
YUSHCHYSHYN, Val – Grande Prairie
ZNAK, Michael – Transportation & Utilities, Edmonton

Alberta

NORTHERN ALBERTA
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